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U.S. Army Environmental Center

FINAL REPORT

VOLUME I OF II

ENVIRONMENTAL BASELINE SURVEY FITZSIMONS ARMY MEDICAL CENTER AURORA, COLORADO

Contract No. DACA31-94-D-0068, D.O. 0001

Prepared for

The U.S. Army Environmental Center

Aberdeen Proving Ground, Maryland

Prepared by

Parsons Engineering Science, Inc.

Denver, Colorado

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May 1996

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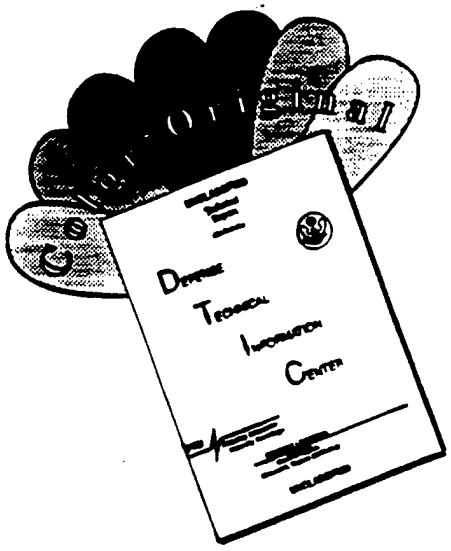

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EXECUTIVE SUMMARY

This Environmental Baseline Survey (EBS) documents a preliminary assessment of the environmental condition of the property occupied by the Fitzsimons Army Medical Center (FAMC) located in Aurora, Colorado. FAMC was selected for closure by the Secretary of Defense in 1995. Nuclear Regulatory Commission license termination and decommissioning is scheduled to commence in 1996. The transfer of ownership of the property to private and public entities will occur over the next several years, and is scheduled to be completed by the year 2001. This EBS is the first step in identifying the condition of the property, the need for environmental restoration, and suitability for transfer. The EBS provides the basis for grouping similar areas of FAMC property and classifying areas according to their environmental condition to support parceling of the property for sale, transfer, and future beneficial use.

The survey methodology used to prepare the EBS included:

- Reviewing FAMC-prepared environmental documents, and federal, state, county, city, and FAMC-specific government records;
- Conducting an electronic environmental records search on property adjacent to FAMC;
- Conducting interviews with current and past employees of FAMC;
- Visually inspecting FAMC and adjacent property;
- Reviewing historical aerial photographs of FAMC and adjacent property; and
- Reviewing recorded title documents.

The current and former characteristics of the property including general property information, building descriptions, FAMC history, tenant activities, and the status of FAMC permits and licenses are presented. In addition, the surrounding environment and land uses are characterized. The demographics, climatology, hydrology, geology, hydrogeology, sensitive environments, and potential human and ecological receptors of the area are also discussed.

Information gathered from various sources, property characterization, and surrounding environment and land use were used to identify the overall environmental condition of FAMC property. In support of the Community Environmental Response Facilitation Act (CERFA), the property was assigned one of the following seven categories as defined in the *Base Realignment and Closure (BRAC) Cleanup Plan Guidebook* (Department of Defense [DoD], 1993):

- Category 1 - Areas where no storage, release, or disposal (including migration) has occurred.
- Category 2 - Areas where only storage has occurred.
- Category 3 - Areas of contamination below action levels.
- Category 4 - Areas where all remedial action has been taken.
- Category 5 - Areas of known contamination with removal and/or remedial action under way.

- Category 6 - Areas of known contamination where required response actions have not yet been implemented.
- Category 7 - Areas that are unevaluated or that require further evaluation.

FAMC property was classified into one of these seven categories. Buildings that were found to be clean, but located within an area that may have contamination in the soil or groundwater, were identified by the most conservative category.

According to the *BRAC Cleanup Plan Guidebook* (DoD, 1993), property identified as Categories 1 through 4 (excluding those buildings that use or store radioactive materials or waste) are eligible for deed transfer. Property in Categories 5 through 7 cannot be considered for transfer until all necessary actions have been taken and the property has been reclassified into one of the first four categories.

A summary of the results of the environmental categorization of the FAMC property from the EBS investigation is as follows. Buildings and areas identified as Category 1 occupy approximately 318 acres and are primarily located on the south and central portions of FAMC. These areas have never stored hazardous substances or petroleum products, and no hazardous substances or petroleum products have been released or disposed. Category 1 areas include vacant land, residential buildings, recreational areas, new construction, and administrative buildings.

Several buildings and areas occupying approximately 18 acres were identified as Category 2. These areas are where hazardous substances, petroleum products, or hazardous or petroleum wastes were used or stored. However, no such substances or wastes have been released or disposed of at these locations.

Three areas on approximately 0.34 acre of FAMC property were identified as Category 3. These areas had confirmed releases of petroleum products with concentrations below regulatory limits. Category 3 areas included two former underground storage tank (UST) sites associated with Building Nos. 20 and 270.

One area on approximately 0.71 acre of FAMC property was identified as Category 4. These areas included a diesel spill that occurred north of Building No. 528, and the former location of leaking USTs north of Building No. 228. The contamination associated with both of these incidents has been remediated.

Two areas on approximately 1.50 acres of FAMC property were identified as Category 5. The contamination in these areas originates from offsite sources. The gasoline station located on the southeast corner of the East Colfax Avenue and Potomac Street intersection experienced a spill of petroleum product that has reportedly migrated onto FAMC property. In addition, the gasoline station located on the northwest corner of the East Colfax Avenue and Peoria Street intersection has confirmed contamination beneath the building which may be migrating toward FAMC.

Three areas on approximately 2.15 acres were identified as Category 6. These sites were caused by leaking USTs. Remediation of one of these sites is covered under an existing construction contract.

Numerous buildings and areas on approximately 236 acres of FAMC property were identified as Category 7. Potential contamination may exist at these sites caused by landfilling, maintenance, medical, and irrigation activities. These areas require further environmental investigation before their status for property transfer can be defined.

A review of previous remediation efforts that have been conducted at FAMC is included. Past remediation efforts have focused on leaking USTs and spills. Spill incident reports from FAMC Directorate of Public Works and regulatory agencies indicate that spills of hazardous substances and petroleum products have been responded to and remediated on a timely basis. One UST site has undergone remedial efforts including the excavation and offsite disposal of petroleum-contaminated soil.

Issues which are not related to contaminants listed in the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) were identified in the EBS to support the development of parcels required by CERFA. CERFA parcels which qualify for immediate transfer include those parcels where:

- Investigation of the property reveals no evidence of storage for one year or more, release, or disposal of hazardous substances, petroleum, or petroleum derivatives and no evidence that the real property is threatened by such releases from adjacent property; or

- No evidence exists for the release or disposal of hazardous substances or petroleum products. The parcel, however, has historically been used to store less than reportable quantities of hazardous substances or 600 or fewer gallons of petroleum derivatives.

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LIST OF ACRONYMS

AAFES	U.S. Army Air Force Exchange Service
ACM	Asbestos-containing material
ACTA	ACTA Resources, Inc.
AEC	U.S. Army Environmental Center
AMEDD	Army Medical Department
APEN	Air Pollution Emission Notice
Army	Department of the Army
AST	Aboveground storage tank
BCP	Base Realignment and Closure Cleanup Plan
bgs	Below ground surface
BRAC	Base Realignment and Closure
BTEX	Benzene, toluene, ethylbenzene, xylenes
°C	Degrees Celsius
CAA	Clean Air Act
CAPS	Colorado Aerial Photograph Service
CDPHE	Colorado Department of Public Health and Environment
CEP	Central Energy Plant
CERFA	Community Environmental Response Facilitation Act
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CERCLIS	Comprehensive Environmental Response, Compensation, and Liability Information System
cm	Centimeter
COPC	Contaminant of potential concern
CRS	Cultural Resources Survey
CWA	Clean Water Act
DADS	Denver Arapahoe Disposal Site and Recycling Center
DARA	Department of Army Radiation Authorization
DCI	Department of Clinical Investigation
DDT	1,1,1-trichloro-2,2-bis-(p-chlorophenyl)ethane
DeCA	Defense Commissary Agency
DEH	Directorate of Housing and Engineering
DENTAC	Dental Activity
DFAE	Directorate of Facilities Engineering
DFAS	Defense Finance and Accounting Service
DMR	Discharge Monitoring Report
DoD	U.S. Department of Defense
DOIM	Directorate of Information Management
DOL	Department of Logistics
DPCA	Directorate of Personnel and Community Activities
DPS	Defense Printing Service
DPW	Department of Public Works
EBS	Environmental Baseline Survey
EPA	U.S. Environmental Protection Agency

ERNS	Emergency Response Notification System
°F	Degrees Fahrenheit
FAMC	Fitzsimons Army Medical Center
FINDS	Facility Index System
GC	Gas chromatograph
HEPA	High-efficiency particulate air (filter)
IET	Initial Entrance Training
in	Inch
IRP	Installation Restoration Program
ITR	Information, Tickets, and Reservations
km	Kilometer
L/m	Liters per minute
LEL	Lower explosive limit
LEPC	Local Emergency Planning Committee
m	Meter
MCL	Maximum Contamination Level
New STRAP	New Specialized Training Assistant Program
NFA	No Further Action
NHPA	National Historic Preservation Act
NPDES	National Pollution Discharge Elimination System
NPL	National Priority List
NRC	Nuclear Regulatory Commission
OCHAMPUS	Office of Civilian Health and Medical Program Uniformed Services
Parsons ES	Parsons Engineering Science, Inc.
PCB	Polychlorinated biphenyl
PCE	Tetrachloroethylene
pCi/L	PicoCurie/liter
ppb	Parts per billion
ppm	Parts per million
PX	Post Exchange
RAATS	Resource Conservation and Recovery Act Administrative Action Tracking System
RAC	Remedial Action Categories
RCRA	Resource Conservation and Recovery Act
RMA	Rocky Mountain Arsenal
RTD	Regional Transportation District
SCS	Soil Conservation Service
TB	Tuberculosis
TCE	Trichloroethylene
TDS	Total dissolved solids
TEPH	Total extractable petroleum hydrocarbons
TPH	Total petroleum hydrocarbon
TRI	Toxic Release Inventory
TSCA	Toxic Substance Control Act
TSD	Treatment, Storage, or Disposal
U.S.	United States
USACE	United States Army Corps of Engineers

USACHPPM	United States Army Center for Health Promotion and Preventive Medicine (formerly USAEHA)
USAEHA	United States Army Environmental Hygiene Agency
USAMEOS	United States Army Medical Equipment and Optical School
USAR	United States Army Reserve
USARAMEDD	United States Army Reserve Army Medical Department
USFWS	United States Department of the Interior Fish and Wildlife Service
UST	Underground storage tank
VOC	Volatile organic compound
WWTP	Wastewater treatment plant

SECTION 1

INTRODUCTION

Fitzsimons Army Medical Center (FAMC) is located in Aurora, Colorado (Figure 1.1), and since 1918 has provided health services to authorized personnel assigned or attached to area Department of Defense (DoD) activities, including inpatient and outpatient medical care and treatment to active military personnel and, within its capabilities, to dependents of active-military personnel, retired military personnel, and other personnel as authorized by the United States (U.S.) Department of the Army (Army). Figure 1.2 presents an overall site map of FAMC. On 28 February 1995, the Secretary of Defense submitted a recommendation that FAMC be selected for closure under the Base Realignment and Closure (BRAC) Act. Closure of FAMC is scheduled for 1996.

Public Laws 100-526 and 101-510 designated more than 100 Army facilities for closure and realignment. It was necessary to investigate and clean up environmental contamination prior to the transfer and reuse of Army BRAC property (BRAC Closure Laws). The BRAC environmental restoration program was established in 1989 after the first round of base closures (BRAC I) was announced. Since 1989, subsequent rounds of BRAC have been identified through public law every two years (BRAC 91, BRAC 93, and BRAC 95). The BRAC environmental restoration program is patterned after the Army's Installation Restoration Program (IRP) except it has been expanded to include categories of contamination such as asbestos, radon, polychlorinated biphenyls (PCBs), radiological hazards, unexploded ordnance, and other environmental concerns which are not normally addressed under the Army IRP. Both the BRAC and IRP programs are patterned after the Environmental Protection Agency's (EPA's) Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) process. For BRAC 95, the environmental restoration program begins by conducting an environmental baseline survey (EBS). This report documents the EBS for FAMC.

The EBS for FAMC will document the environmental condition of the property prior to transfer of real property in accordance with the Community Environmental Response Facilitation Act (CERFA). The property is evaluated with respect to storage, release, or disposal of hazardous substances and petroleum products. Results of the EBS are used to determine the suitability to lease or transfer excess BRAC property.

During closure of FAMC, ownership of the property (building, grounds, and physical plant facilities) will be transferred from the Army to public and private entities and is scheduled to be completed by the year 2001. The Fitzsimons Redevelopment Authority has been

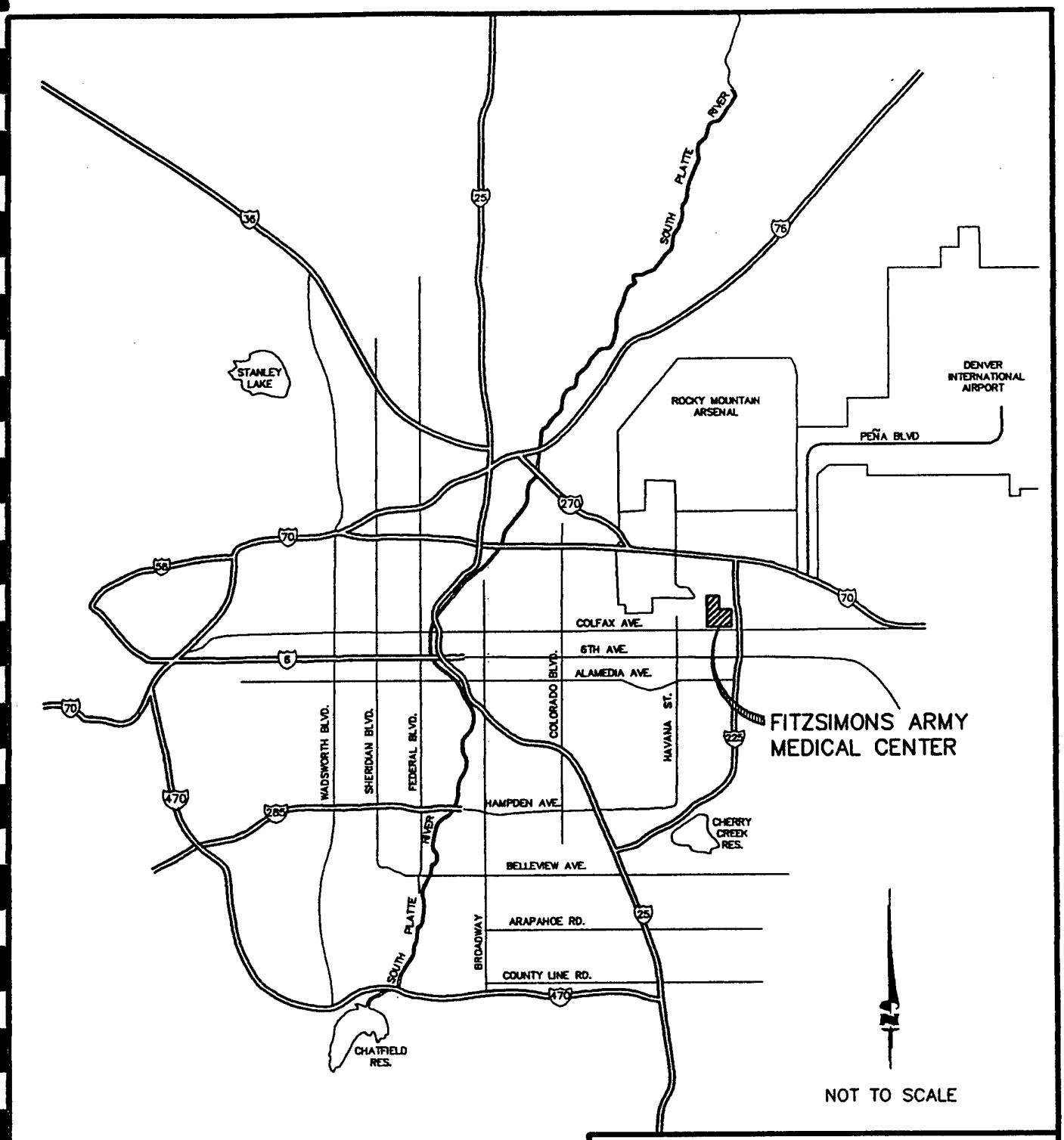

FIGURE 1.1

VICINITY MAP OF FAMC

Environmental Baseline Survey
Fitzsimons Army Medical Center
Aurora, Colorado

PARSONS ENGINEERING SCIENCE, INC.
Denver, Colorado

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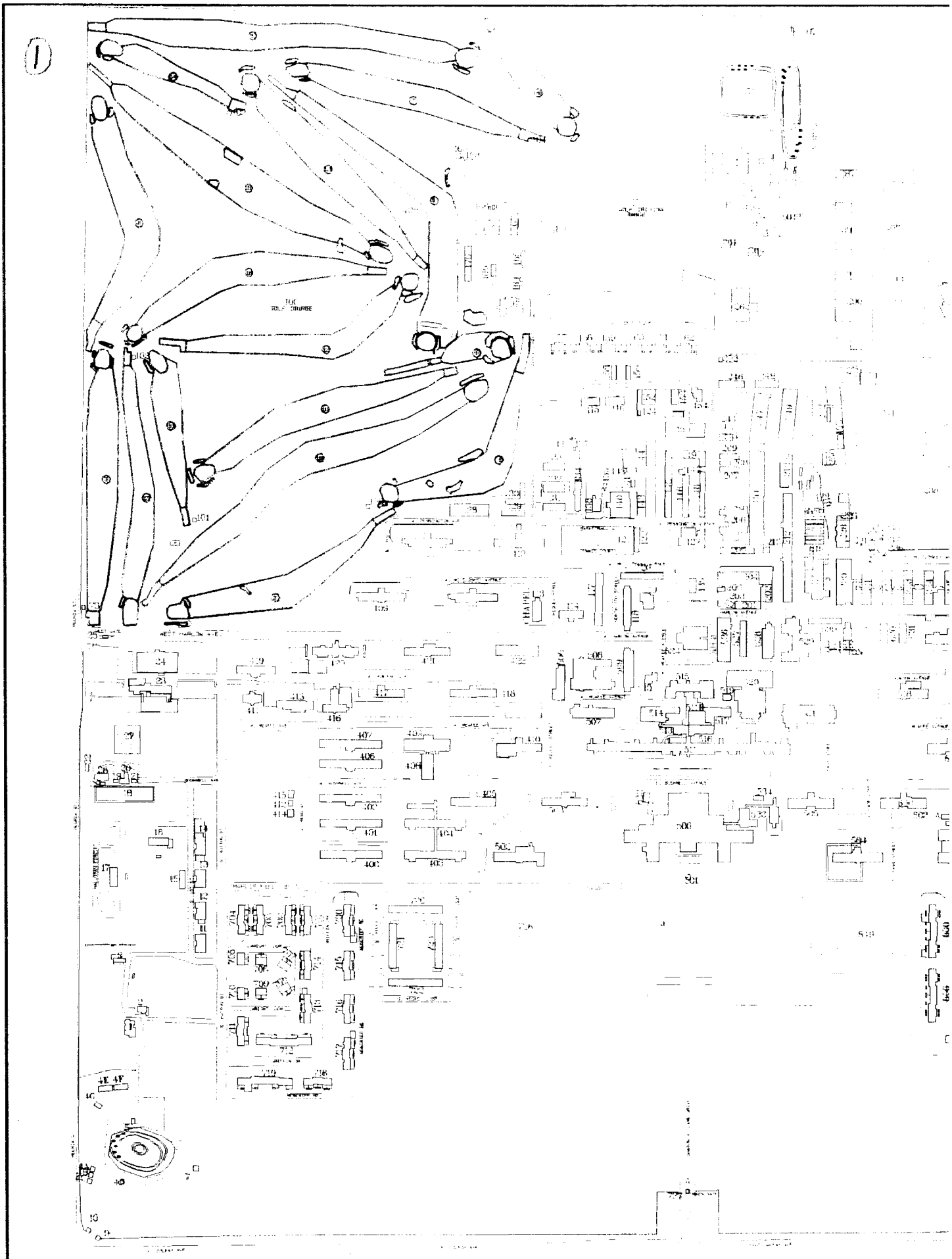
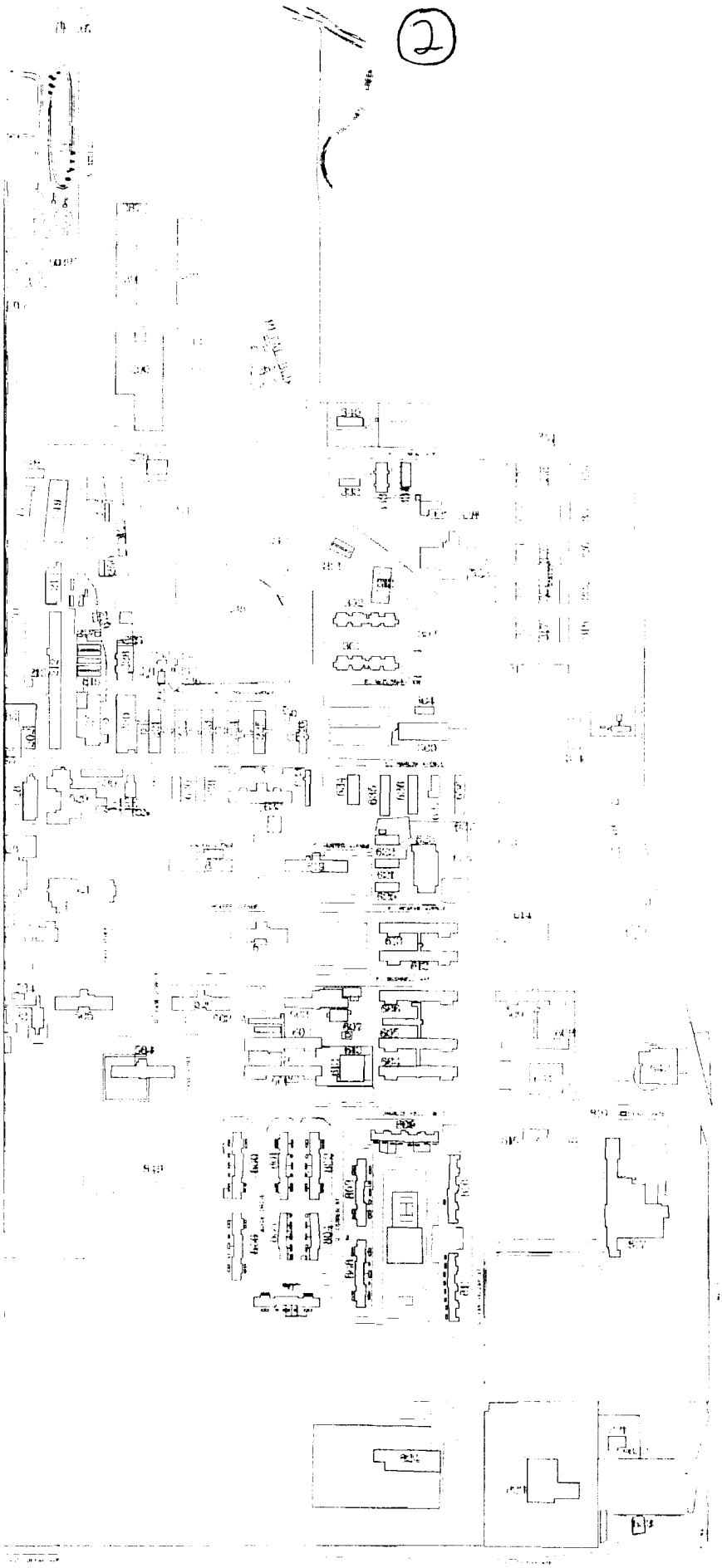




Legend

Golf Course

Recreational

Roads

Buildings

Drainage

Fences

N

100 0 100 200

SCALE IN METERS

REVISION	DATE	DE

ENVIRONMENTAL
FITZSIMONS ARMY

SOURCE:
Fitzsimons
Army Medical Center

SITE

Projection: UTM - NAD27

(3)

Legend

- Golf Course
- Recreational
- Roads
- Buildings
- Drainage
- Fences

100 0 100 200 300 400

SCALE IN METERS

REVISION	DATE	DESCRIPTION	BY

ENVIRONMENTAL BASELINE SURVEY
FITZSIMONS ARMY MEDICAL CENTER

SOURCE: [illegible] Army Medical Center

SITE MAP OF FAMC

Projection: UTM - NAD27

Figure 1.2

established to coordinate and organize efforts by parties interested in leasing or purchasing FAMC property. In order to make the property attractive and suitable for transfer of ownership, the existence and extent of present and former environmental contamination and environmental and health hazards must be identified, and cleanup of many of these hazards undertaken.

This document was prepared by Parsons Engineering Science, Inc. (Parsons ES) under Contract No. DACA31-94-D-0068, Delivery Order No. 0001, between the U.S. Army Environmental Center (AEC) and Parsons ES.

1.1 AUTHORITY FOR THE ENVIRONMENTAL BASELINE SURVEY

In October 1992, Public Law 102-426, CERFA-amended Section 120(h) of CERCLA established new procedures with respect to contamination assessment, cleanup, and regulatory agency notification and concurrence for federal facility closures. The primary objective of CERFA is for federal agencies to expeditiously identify real property offering the greatest opportunity for immediate reuse and redevelopment. Although CERFA does not mandate that the Army transfer real property so identified, the first step in satisfying the objectives is the requirement to identify real property where no CERCLA-regulated hazardous substances or petroleum products were stored, released, or disposed.

This EBS was conducted in accordance with the DoD Fast Track Cleanup at Closing Installations (memorandum dated 9 September 1993), DoD Finding of Suitability to Transfer (memorandum dated 1 June 1994), and BRAC 95 Environmental Baseline Survey/Base Realignment and Closure Cleanup Plan (EBS/BCP) Guidance (AEC, 1995).

1.2 OBJECTIVE

The primary objective of this EBS is to characterize the environmental condition of individual buildings and surrounding grounds on FAMC property with regard to the existence of present or former environmental contamination from spills or leaks of petroleum or hazardous substances, the existence of present or former hazardous materials of construction, and present or former hazardous substance storage sites. Specifically, the EBS identifies those areas of FAMC where hazardous substances, as defined under CERCLA, and petroleum products have been stored for longer than one year, disposed, or released to the environment. The EBS identifies areas that are of environmental or safety concern with respect to non-CERCLA contaminants (asbestos, lead-based paint, radon, and radioactive materials). Radioactive materials at FAMC are regulated by the Nuclear Regulatory Commission (NRC) and are therefore not addressed as CERCLA issues in the EBS. Identification and cleanup of residual radioactive materials at FAMC will be addressed through the NRC's decommissioning process. Any release of radioactive material outside of the scope of the NRC license will be considered a CERCLA issue. In addition, this EBS includes the CERFA letter report which groups similarly categorized buildings and areas into parcels which are either suitable for property transfer to public or private entities or require further review or action prior to transfer.

1.3 ORGANIZATION OF THE ENVIRONMENTAL BASELINE SURVEY

This EBS contains six sections and seven appendices.

- Section 1 presents an overview of the EBS process and identifies the regulatory drivers for preparation of the EBS.
- Section 2 presents the methodology of the survey.
- Section 3 presents an overall characterization of FAMC including a discussion of the current and past uses of the real property, and status of regulatory permits and licenses.
- Section 4 presents a general discussion of the surrounding environment and land uses.
- Section 5 presents findings of the EBS research.
- Section 6 presents the property categorization.
- Appendix A contains the CERFA letter report.
- Appendix B contains reference documents used in the EBS.
- Appendix C contains hazardous substance inventory, cleanup sites, and non-CERCLA related issues worksheets.
- Appendix D contains the results of the electronic search of offsite sources of contamination which may affect the FAMC property.
- Appendix E contains the interview summaries from knowledgeable persons associated with FAMC.
- Appendix F contains the visual inspection summaries of individual buildings and surrounding grounds at FAMC.
- Appendix G contains selected aerial photographs of FAMC.

SECTION 2

SURVEY METHODOLOGY

The CERFA requires a number of sources of information to be reviewed concerning current and previous uses of real property to be transferred from the U.S. government. The survey methodology used to prepare the EBS for FAMC was conducted in accordance with CERFA and included:

- Reviewing available FAMC environmental documents and available federal, state, county, city, and FAMC-specific government records;
- Conducting an electronic environmental records search for FAMC and surrounding property;
- Conducting interviews with current and past employees of FAMC;
- Visually inspecting FAMC and adjacent property;
- Reviewing historical photographs of FAMC and adjacent property; and
- Reviewing recorded title documents.

Although within CERFA, sampling was not considered appropriate for this EBS. Each of these topics is further discussed below. A summary of the information found while conducting the above-listed activities is presented in Section 5.

2.1 FAMC ENVIRONMENTAL DOCUMENTS

Over the course of its history, FAMC has prepared or contracted the development of numerous environmental surveys, investigations, and reports on both individual buildings and the installation as a whole. A document search was conducted in the environmental files at FAMC. Nine documents of this kind were identified as applicable to the development of the environmental baseline at FAMC. These documents were reviewed with respect to locations of storage, release, or disposal of hazardous substances or petroleum products, ongoing response actions, and identification of hazardous or petroleum waste sources. The documents are:

- *Installation Environmental Baseline Conditions and Compliance Study* (TechLaw, 1994);
- *U.S. Army Environmental Hygiene Agency, Environmental Compliance Assessment System External Assessment No. 43-21-N18F-93, Draft Findings Report*; (U.S. Army Environmental Hygiene Agency [USAEHA], 1993).

- *Analytical/Environmental Assessment Report for Future Development Plans* (FAMC, 1985a);
- *Capability Analytical/Environmental Assessment Report* (FAMC, 1985b);
- *Installation Assessment of Fitzsimons Army Medical Center* (Environmental Science and Engineering, Inc. [ES&E], 1984);
- *Analysis of Existing Facilities/Environmental Assessment Report* (Higginbotham & Assoc., 1977);
- *30-Percent Design, Work Plan Remedial Design Army Air Force Exchange Service Station - Draft* (International Technology Corporation, Inc. [IT], 1995);
- *Building 230, Contaminated Soils Removal and Delineation of Hydrocarbon Impacted Soils - Draft Final* (IT, 1994); and
- *Rapid Response Underground Storage Tank Closures* (IT, 1992).

In addition, the *Cultural Resources Study for Fitzsimons Army Medical Center* (Simmons, 1991) (CRS) provided information pertaining to buildings at FAMC that are older than 50 years. The report was used as the primary reference for historical information regarding past operations conducted in buildings older than 50 years, former tenants, and the potential use of hazardous substances or petroleum products.

2.2 REGULATORY AND FAMC RECORDS

Regulatory, FAMC, adjacent and/or surrounding property records were identified and reviewed from the following sources: EPA, Colorado Department of Public Health and Environment (CDPHE), State of Colorado Oil Inspector's Office, Adams and Arapahoe County, Tri-County Health Department, City of Aurora, City of Aurora Fire Department, and FAMC. The records were reviewed to assist in the identification of areas where storage, release, or disposal of hazardous substances or petroleum products has occurred. The records were also reviewed to identify ongoing response actions, and to identify hazardous or petroleum waste sources. With respect to offsite property, the records review was conducted focusing on property adjacent to FAMC, unless noted otherwise.

2.3 ELECTRONIC SEARCH OF PUBLIC ENVIRONMENTAL RECORDS

An electronic search was performed to identify those properties surrounding FAMC that are present on federal and state environmental lists. These lists include EPA Resource Conservation and Recovery Act (RCRA) Generators/Treatment, Storage, and/or Disposal (TSD) Facilities, RCRA Violators, RCRA Enforcements, RCRA Administrative Action Tracking System (RAATS) Enforcements, CERCLA/National Priority List (NPL), NPL County Sites, Toxic Release Inventory (TRI), Facility Index System (FINDS), Emergency Response Notification System (ERNS), Civil Enforcement Docket, No Further Action (NFA)

CERCLA Sites, Underground Storage Tank (UST) Locations, Leaking Tank Locations, Solid Waste Facilities, and Old Waste Sites.

2.4 INTERVIEWS AND VISUAL INSPECTIONS

Interviews and visual inspections were conducted at FAMC to assist in determining the environmental condition of FAMC and to determine any areas requiring environmental evaluation not previously documented during the review of records. Information gathered during the review of records was assimilated and evaluated. The CRS and Real Property records provided the most useful information for focusing the interview and visual inspection phase of the EBS.

Areas of FAMC with previously identified environmental problems were not targeted for either an interview or a visual inspection unless it was determined that additional information was needed to better understand the types of waste management practices conducted at that area or building. Areas or buildings which were preliminarily identified as exhibiting few environmental problems were targeted for further investigation.

Interviews were conducted both by telephone and in person. Telephone interviews were conducted for those facilities which were identified as always being administrative or if its use was fairly well documented (e.g., CRS). In-person interviews were conducted with personnel who had worked at the buildings for many years (to obtain historical information) or for buildings whose use or structural materials were questionable (e.g., dirt or concrete floor). More than 75 current and former employees were interviewed and approximately 49 areas and buildings at FAMC were inspected. Properties adjacent to FAMC were visually inspected by automobile survey, which did not reveal the need for visual inspections of individual offsite properties.

2.5 AERIAL PHOTOGRAPH ANALYSIS

An analysis of aerial photographs was conducted for the area including FAMC and immediately surrounding properties to determine past practices which may have caused environmental releases. Aerial photographs of FAMC were obtained from the FAMC Real Property Office, located in Building No. 118 (years 1962 and 1969), and from Colorado Aerial Photograph Service (CAPS) located in Denver, Colorado (years 1948-1960, 1965, 1967, 1968, and 1970-1995). Interpretations and resulting figures are based on visually observable changes in land use and may include ground staining, drum storage, landfill trenching, and debris piling. Some of these features may or may not be indicative of past practices indicating environmental releases. The scale of the photographs analyzed did not allow for conclusive interpretation of these physical features.

2.6 TITLE DOCUMENTS

A review of the chain of title documents for FAMC was conducted to gain an understanding of historical ownership and easements issued for FAMC property.

SECTION 3

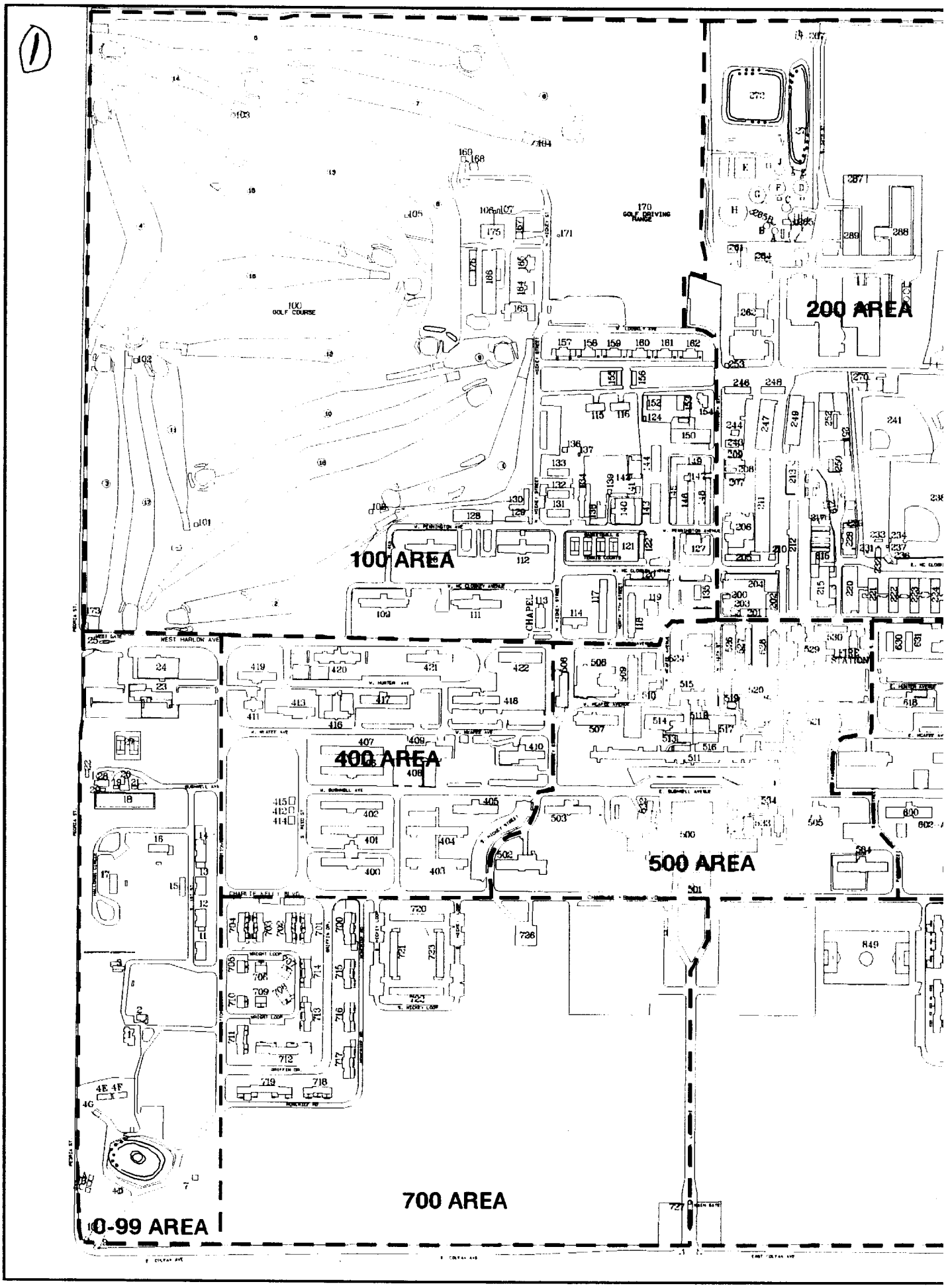
PROPERTY DESCRIPTION

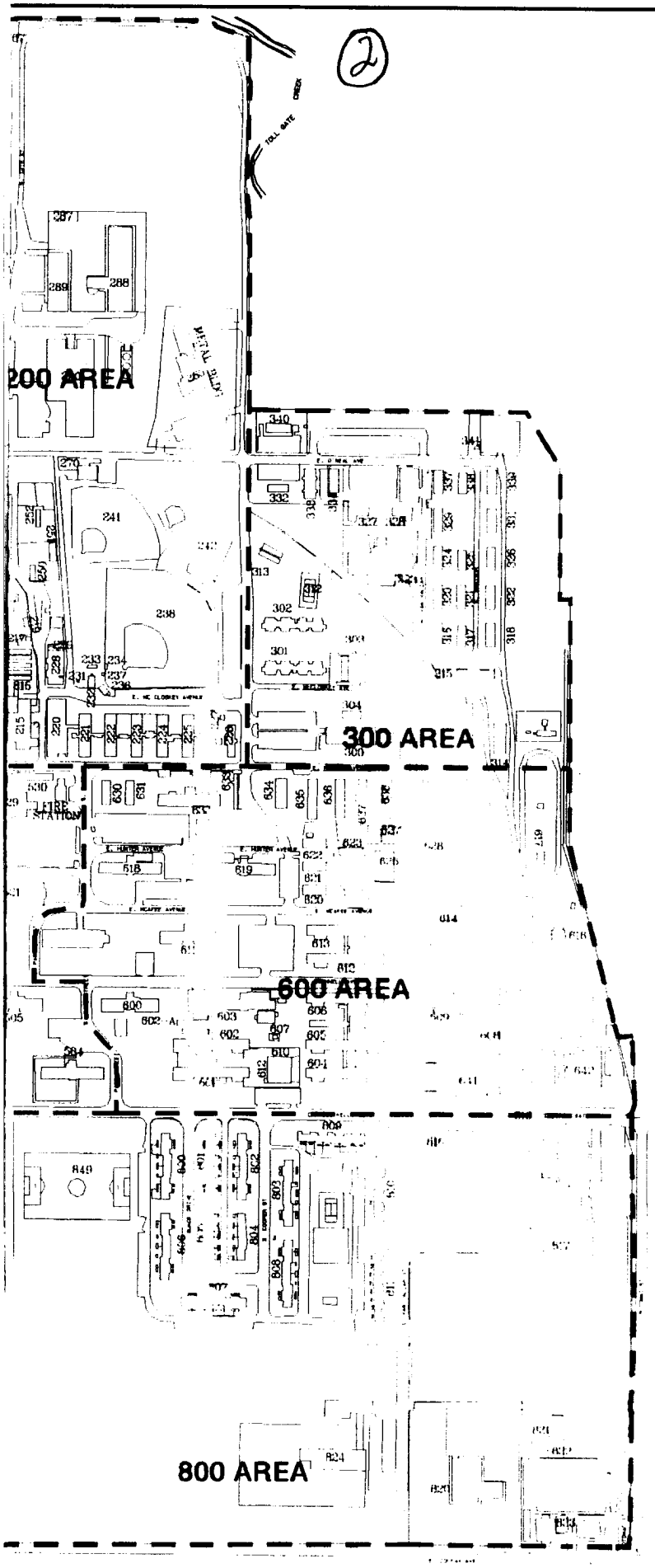
3.1 GENERAL PROPERTY INFORMATION

FAMC is located approximately eight miles east of downtown Denver in northwestern Aurora, Colorado. The facility covers an area of 576.51 acres at the northeast corner of East Colfax Avenue and Peoria Street in Section 36, Township 3 South, Range 67 West, 6th Principal Meridian, in Adams County, Colorado. The elevation on the installation ranges from 5,387 feet (1,642 meters) above mean sea level along the central part of the southern boundary to 5,318 feet (1,621 meters) along the central section of the northern boundary (TechLaw, 1994). The installation includes 289 acres of buildings, 141 acres of improved grounds, and 146 acres of unimproved grounds (FAMC, 1993). Land uses at FAMC include medical, commercial, industrial, residential, and recreational.

FAMC has been divided by the Army into nine land area divisions (FAMC, 1993) as shown in Figure 3.1. The building numbering system at FAMC is based on numbering of buildings corresponding to the land area division the building is within. The land area divisions are described as follows:

- Area 0-99 is located in the southwest corner of the installation and includes residential and recreational facilities.
- Area 100 is in the northwest corner of FAMC and is comprised of residential, administrative, recreational, and maintenance facilities. The golf course occupies 75 percent of the land in Area 100.
- Area 200 is situated on the north side of the property and contains the majority of industrial and maintenance facilities and softball fields.
- Area 300 is in the northeast corner of Fitzsimons and contains administration, recreation, and residential uses.
- Area 400 is located on the west side and contains residences and administration buildings.
- Area 500 is in the center of FAMC and includes the main hospital and support facilities.


200 AREA
100 AREA
400 AREA
500 AREA
700 AREA
0-99 AREA
WEST HARLOW AVE
CHAPEL
FIRE STATION
100 GOLF COURSE
170 GOLF DRIVING RANGE



Legend

Land Area Division Bou

N

100 0 100 200 300

SCALE IN METERS

REVISION	DATE	DISCRIPTION

ENVIRONMENTAL BASELIN
FITZSIMONS ARMY MEDICA

SOURCE: Fitzsimons Army Medical Center

NINE LAND A
DIVISIONS OF

Projection: UTM - NAD27

(3)

Legend

Land Area Division Boundary

100 0 100 200 300 400

SCALE IN METERS

REVISION	DATE	DESCRIPTION	BY

ENVIRONMENTAL BASELINE SURVEY
FITZSIMONS ARMY MEDICAL CENTER

SOURCE: Fitzsimons Army Medical Center

NINE LAND AREA DIVISIONS OF FAMC

Projection: UTM - NAD27

Figure 3.1

- Area 600 is on the east side of FAMC and contains administration, hospital clinics, clinical research, environmental laboratories, and residences.

- Area 700 is on the south end of FAMC and contains the helicopter pad, residences, and agricultural land.

- Area 800 is located at the south corner of Fitzsimons and is comprised of residential, administration, and commercial facilities.

Water for FAMC is provided by three sources. Potable water is piped from the city of Denver to the FAMC distribution system. A water well presently in poor condition was formerly used as an emergency source of water for the boiler plant. This well is located south of the softball fields. The well was constructed in 1947 and was not required to be registered with the State Engineer's office. All wells installed prior to 1972 were not required to be registered with the State Engineer's office. Another source of water at FAMC is the Highline Canal, which provides irrigation water for an agricultural lease.

Electrical power is supplied by Public Service of Colorado, with an emergency generator plant as a secondary source. Natural gas is purchased from Public Service of Colorado for domestic use and by the Defense Fuel Supply Agency for industrial use. The existing boiler plant provides steam for heating 80 percent of the installation. Individual gas-fired boilers heat the remainder of the installation and are located at some residential buildings and the Army Reserve Center. The backup generator for the boiler plant operates on fuel oil. The fuel oil is stored in 12 USTs located immediately north of the boiler plant. Sanitary and stormwater sewer systems serve FAMC. A wastewater treatment plant, with a one-million gallon per day nominal capacity and an average throughput of 300,000 to 400,000 gallons per day also serves FAMC.

A new Central Energy Plant (CEP) currently under construction includes a natural gas-fired steam plant with a diesel fuel backup. This facility will replace the existing boiler plant and provide heat to most of the installation. Also, Directorate of Public Works (DPW) functions will relocate to the Facility Engineer Compound. These facilities are under construction in the area of the former skeet range at FAMC.

An extensive railroad system was developed when FAMC was originally established in 1918. These tracks were connected to Lowry Air Force Base and Buckley Field in 1938. The tracks entered the installation on the north side, immediately east of the wastewater treatment plant (WWTP) and crossed the property on the east side. Spurs were also located adjacent to the ice house and the boiler plant. These tracks were used to bring in coal and other supplies to the installation. These spur tracks have not operated since June 1965. Review of the 1970 aerial photograph indicates that the railroad track bridge crossing Tollgate Creek to the north of FAMC had been removed, but the tracks were still present on the remainder of the installation. Since 1970, all railroad tracks on the installation have been removed.

3.2 DESCRIPTION OF BUILDINGS

There are approximately 300 buildings at FAMC; Table 3.1 presents a listing of the buildings, current and past building numbers (where available), date of construction, and current and past building uses.

The main hospital at FAMC (Building No. 500) provides full medical services for active and retired military personnel. Most other buildings at FAMC support this medical mission, including research and development activities, residential quarters for military personnel, recreational facilities, maintenance and self-help buildings, and administrative services for military and retired military personnel. In addition, the Optical Fabrication Laboratory (Building No. 628) manufactures eyeglasses for the U.S. Armed Forces.

The dates of construction of the buildings range from 1897 to 1995, but most construction occurred from 1918 to the present. Older buildings were constructed of reinforced concrete foundations and walls with terra cotta wall-tile stucco (War Dept., 1923). The roofs were wood-covered with a four-ply tar and gravel material or "elaterite." The interior floors, partitions, and ceilings were of wood construction. The partitions and ceilings were covered with asbestos plaster board and two coats of wall plaster. Interior woodwork was painted white pine. Restrooms, bathrooms, and utility rooms mostly had cement floors. Roofing material was generally of asbestos-containing material. Over the years, the material and type of construction for buildings were consistent with standard practice for the time period.

3.3 PROPERTY HISTORY

Mr. Alfred H. Gutheil, an early land developer, established a subdivision at the location of FAMC, planning to develop a residential neighborhood. Mr. Gutheil operated a commercial landscape nursery called "Gutheil Gardens," which was stocked with evergreens and deciduous trees, shrubs, roses, and vegetable roots. Mr. Gutheil lived in a large two-story residence called "Park Lodge" which now is the commanding officer's quarters, Building No. 1 (Fitzsimons Facts, 1992).

The Denver Civic and Commercial Association led a campaign to acquire a military facility in the Denver area after the beginning of World War I. Colonel George Bushnell inspected several locations in the Denver area to construct a recuperation camp for military personnel infected with tuberculosis (TB) and selected the grounds of Gutheil Nursery. Citizens of Denver and Aurora, the City of Denver, and the Town of Aurora contributed to the purchase of FAMC. In this capacity the Civic and Commercial Association became the sole owner of the land, and leased the land to the government (Fitzsimons Facts, 1992). In October 1937, the process of transferring FAMC from the Civil and Commercial Association to the United States was finalized (Simmons, 1991).

In April 1918, ground was broken for construction of 48 buildings of the original Army General Hospital No. 21 (Fitzsimons Facts, 1992) as shown in the site map on Figure 3.2. The first buildings were an administration building, officers' TB ward, officers' quarters, nurses' infirmary, operating pavilion, garages, officers' recreation

TABLE 3.1
LIST OF FAMC BUILDINGS
ENVIRONMENTAL BASELINE SURVEY
FITZSIMONS ARMY MEDICAL CENTER
AURORA, COLORADO

Current Building Number(s)	Current Building Name	Date of Construction	Past Building Number(s)	Historic Building Name(s) Original Design Use Description	Current Building Use	Past Building Use
1	Commanding Officer's Residence	1897	1	Gutheil House	Residential	Residential
2	Commanding Officer's Garage	1897	2	Garage	Garage	Laundry/Servants Quarters
3	Commanding Officers' Storehouse	1920		Engineering/Maintenance Facility	Storehouse	Storehouse
4	Duck Pond	1927		Gutheil Park Nursery Pond	Pond	Pond
4A	General's Park Shelter with BBQ	1968		General's Park Shelter with BBQ	Park Shelter with BBQ	Park Shelter with BBQ
4B	General's Park Shelter with BBQ	1968		General's Park Shelter with BBQ	Park Shelter with BBQ	Park Shelter with BBQ
4C	General's Park Shelter with BBQ	1968		General's Park Shelter with BBQ	Park Shelter with BBQ	Park Shelter with BBQ
4D	General's Park Shelter with BBQ	1968		General's Park Shelter with BBQ	Park Shelter with BBQ	Park Shelter with BBQ
4E	General's Park Shelter with BBQ	1973		General's Park Shelter with BBQ	Park Shelter with BBQ	Park Shelter with BBQ
4F	General's Park Shelter with BBQ	1973		General's Park Shelter with BBQ	Park Shelter with BBQ	Park Shelter with BBQ
4G	General's Park Shelter with BBQ	1956		General's Park Shelter with BBQ	Park Shelter with BBQ	Park Shelter with BBQ
5	Generals' Park General Storehouse	1942		Storehouse	Storehouse	Storehouse
6	Basketball Court - General's Park	1930		Basketball Court - General's Park	Basketball Court	Basketball Court
7	General Storehouse - Youth Services	1952		Storehouse	Storehouse	Storehouse
8	General Purpose Playground - General's Park	1965		General Purpose Playground - General's Park	General Purpose Playground	General Purpose Playground
9	Public Restroom	1919	27	Sentry House	Restroom	Guard House
10	Public Restroom	1919	27	Sentry House	Restroom	Guard House
11	Field Grade Officers' Quarters	1921	31	Officers' Quarters	Residential	Residential
12	Field Grade Officers' Quarters	1921	31	Officers' Quarters	Residential	Residential
13	Field Grade Officers' Quarters	1921	31	Officers' Quarters	Residential	Residential
14	Field Grade Officers' Quarters	1921	31	Officers' Quarters	Residential	Residential
15	Detached Garage	1921	856	Officers' Garage and Fire Equipment House	Garage	Garage and Equipment House
16	Field Grade Officers' Quarters	1947		Officers' Quarters	Residential	Residential
17	Field Grade Officers' Quarters	1947		Officers' Quarters	Residential	Residential
18	Water Reservoir	1918	855	Water Reservoir	Water Reservoir	Water Reservoir
19	Chlorine House/Wastewater Treatment	1948		Water Treatment Building	Chlorine Storage	Chlorine Storage
20	Water Pump Station Building/Boy Scout Building	1918	830	Booster Pump Station	Booster Pump Station	Booster Pump Station and Attendant's House in 1960s
21	Detached Garage	1928	747	Garage	Garage	Garage
22	Water Backflow Prevention Building	1989		Water Treatment Building	Water Backflow Prevention	Water Backflow Prevention
23	ITR	1929	879	Post Exchange Garage No. 3	Moral Support	Garage for Golf Starter House and Officer's Club in 1940s
24	Officers' Club	1923	10	Bachelor Officers' Quarter, Mess & Kitchen	Administration	Residential/Officer's Club
25	Sentry Station	1986		Sentry Station	Sentry Station	Sentry Station
26	Installation Sign - Corner Park	1964		Installation Sign - Corner Park	Installation Sign	Installation Sign
27	Tennis Courts	1975		Tennis Courts	Tennis Courts	Tennis Courts
28	Water Pump Station			Water Pump Station	Water Pump Station	Water Pump Station
29	Aboveground Storage Tank			Aboveground Storage Tank	Aboveground Storage Tank	Aboveground Storage Tank
100	Golf Course	1920		Golf Course/Alphalfa Field	Golf Course	Golf Course
101	Golf Course Waiting Shelter	1944		Golf Course Waiting Shelter	Golf Course Waiting Shelter	Golf Course Waiting Shelter
102	Golf Course Waiting Shelter	1944		Golf Course Waiting Shelter	Golf Course Waiting Shelter	Golf Course Waiting Shelter
103	Golf Course Waiting Shelter	1944		Golf Course Waiting Shelter	Golf Course Waiting Shelter	Golf Course Waiting Shelter
104	Golf Course Waiting Shelter	1944		Golf Course Waiting Shelter	Golf Course Waiting Shelter	Golf Course Waiting Shelter
105	Golf Course Public Restroom	1949		Public Restroom	Restroom	Restroom
106	General Storehouse	1942		General Storehouse	Storage Garage	Storage Garage
107	General Storehouse	1942		General Storehouse	Storage Garage	Storage Garage
108	Golf Course Waiting Shelter	1944		Golf Course Waiting Shelter	Golf Course Waiting Shelter	Golf Course Waiting Shelter
109	Officers' Quarters	1919	5	TB Ward	Residential	TB Ward 1919-1920
110	Officers' Quarters	1919	5	TB Ward	Residential	TB Ward 1919-1920
111	Officers' Quarters	1919	5	TB Ward	Residential	TB Ward 1919-1920
112	Officers' Quarters	1919	5	TB Ward	Residential	TB Ward 1919-1920
113	Chapel	1942	22	Chapel	Chapel	Chapel
114	Civilian Personnel Office	1943	342	Guest House	Administration	Guest House during WW II, Woman's barracks in 1960s
115	Storehouse	1941	24	Barracks	Storehouse	Residential
116	Storehouse	1941	24	Barracks	Storehouse	Residential
117	Administration General Purpose	1923	864	Nurses' Quarters No. 3	Administration	Residential
118	Engineering Administration	1918	720	Officers' Quarters	Administration	Residential
119	AAFES Regional Office	1918	722	Officers' Recreation Building	Administration	Recreation in 1920s/Hospital Clinic in 1923/Credit Union
120	EEO	1918	721	Female Dormitory	Administration	Female Dormitory until 1940
121	Multiple Court/Basketball and Tennis	1940		Multiple Court/Basketball and Tennis	Multiple Court/Basketball and Tennis	Multiple Court/Basketball and Tennis
122	Pest Control/Storage	1920	21	Nurses' Garage	Maint. Shop/Pesticide Storage	Garage

TABLE 3.1 (Continued)
LIST OF FAMC BUILDINGS
ENVIRONMENTAL BASELINE SURVEY
FITZSIMONS ARMY MEDICAL CENTER
AURORA, COLORADO

Current Building Number(s)	Current Building Name	Date of Construction	Past Building Number(s)	Historic Building Name(s) Original Design Use Description	Current Building Use	Past Building Use
121	Multiple Court/Basketball and Tennis	1940		Multiple Court/Basketball and Tennis	Multiple Court/Basketball and Tennis	Multiple Court/Basketball and Tennis
122	Pest Control/Storage	1920	21	Nurses' Garage	Maint. Shop/Pesticide Storage	Garage
123	Playground	1989		Playground	Playground	Playground
127	Directorate of Logistics	1919	779	Office Building	Administration	Administration
128	Tractor Shop	1920	810	Officers' Garage	Maint. Shop/Tractor Shop	Garage
129	Detached Garages	1936	889	Officers' Garage	Garage	Garage
130	Transportation Division	1944	237	WAC Recreation and Administration	Administration	Administration and Recreation
131	Army Community Service	1944	500	WAC Barracks	Administration	Residential
132	Welcome Center	1944	501	WAC Barracks	Military Personnel	Residential
133	Housing Division	1944	530	WAC Barracks	Military Personnel	Residential
134	Directorate of Facilities Engineering	1944	502	WAC Mess Hall	Mess Hall	Residential
135	Post Exchange Service Station	1966		Automobile Service	Service Station	Service Station
136	Covered Picnic Area with BBQ	1948		Covered Picnic Area with BBQ	Covered Picnic Area with BBQ	Covered Picnic Area with BBQ
137	General Storehouse	1946		Engineering/Housing Maintenance	Storehouse	Restrooms/Storehouse
138	Greenhouse	1950		Greenhouse	Greenhouse	Greenhouse
139	Underground Storage Facilities	1923	504	Root Cellar	Underground Storage of Fertilizer	Root Cellar
140	Greenhouse	1923	854	Greenhouse	Greenhouse	Greenhouse
141	Utility Building and Ground Division	1922	854	Toolhouse	Administration	Toolhouse for Post Gardener
142	Roads & Grounds General Storage/Fuel Farm Area	1935	885	Gardeners' Implement Shed	Storehouse/Fuel Farm	Implement Shed Storing Tractors and Lawnmowers
143	Storehouse	1936	853	Post Exchange Garage	Service Station	Garage
144	Shared Storage/Vehicles	1924	873	Post Exchange Garage	Hazardous material Storage	Garage
145	Self-Help Storehouse/Metals Shop	1920	789	Storage Shed	Storehouse	Storage Shed
146	Archie's Warehouse	1920	799	Utility Storeroom	Storehouse	Storehouse
147	Storehouse	1942	800	Storage Shed	Storehouse	Storage Shed
148	Electrical and Plumbing Shop	1920	791	Shop	Maintenance Shop	Maintenance Shop/Locksmith/Tinner/Electrician/Plumber
149	Maintenance Shop	1920	792	Carpenter Shop	Maintenance Shop	Carpenter/Metal Shop
150	Furnishing/Lumber/Sign Shop	1948		Engineering/Housing Maintenance	Locksmith/Sign/Furniture Shop	Storehouse
152	Implement Sheds	1928	25	Farm Implement Building	Miscellaneous Storage	Farm Implement Storage
153	Vehicle Storage	1928	554	Equipment Shed	Vehicle Storage	Vehicle Storage
154	DPW Roads and Grounds	1942	555	Veterinary Hospital	Administration	Veterinary Hospital in 1940s
155	Family Housing Detached Garage	1936	890	NCO Garages	Garages	Garages
156	Family Housing Detached Garage	1936	891	NCO Garages	Garages	Garages
157	NCO Quarters	1921	26	NCO Quarters	Residential	Residential
158	NCO Quarters	1921	26	NCO Quarters	Residential	Residential
159	NCO Quarters	1921	26	NCO Quarters	Residential	Residential
160	NCO Quarters	1921	26	NCO Quarters	Residential	Residential
161	NCO Quarters	1921	26	NCO Quarters	Residential	Residential
162	NCO Quarters	1921	26	NCO Quarters	Residential	Residential
163	Golf Course Main Club House	1941	815	NCO Quarters	Golf Club House	Residential/Portions from Lowry Field
164	NCO Family Housing	1922	829	Civilian Employees Quarters	Residential	Residential
165	Storage	1924	798	Warrant Officers Quarters	Storage	Residential
166	Garage Storage	1936	892	NCO Garage	Storage	Garage
167	Golf Course Maintenance	1949		Golf Course Maintenance	Maintenance Equipment Storage	Maintenance Equipment Storage
168	Storage	1918	813	Civilian Housing	Storage	Residential
169	Detached Garage	1918	804	Garage	Garage	Garage from Gutheil Nursery
170	Golf Course Driving Range	1964		Golf Course Driving Range	Golf Course Driving Range	Golf Course Driving Range
171	Golf Club Storage Building	1965		Golf Course Maintenance	Storage	Storage
172	Flammable Material Storage/Golf Course Maintenance - Demolished	1960		Flammable Material Storage/Golf Course Maintenance	Demolished	Flammable Material Storage/Golf Course Maintenance
173	Gas Meter/Distribution Station (not owned by FAMC)	1973		Utility Building	Utility Building	Utility Building
174	Low-Level Wind Shear	1989		Low-Level Wind Shear	Low-Level Wind Shear	Low-Level Wind Shear
175	Golf Cart Storage	1994		Golf Course Maintenance	Golf Cart Storage	Golf Cart Storage
176	Golf Cart Storage	1994		Golf Cart Maintenance	Golf Cart Storage	Golf Cart Storage
195	General Purpose Playground	1970		General Purpose Playground	General Purpose Playground	General Purpose Playground
200	Motor Pool	1919	785	Motor Transport Dispatcher's Office	Administration	Administration Office and Bank
201	Temporary Garage Storage	1920	352	Motor Transportation Garage and Shop	Motor Repair Shop	Motor Garage and Shop since 1940s
202	Motor Repair Shop	1919	706	Motor Transport Garage	Motor Repair Shop	Garage - Tool Room and Two Garages
203	Supply - Temporary Car/Bus Wash	1988		Supply - Temporary Car/Bus Wash	Supply - Temporary Car/Bus Wash	Supply - Temporary Car/Bus Wash

TABLE 3.1 (Continued)
LIST OF FAMC BUILDINGS
ENVIRONMENTAL BASELINE SURVEY
FITZSIMONS ARMY MEDICAL CENTER
AURORA, COLORADO

Current Building Number(s)	Current Building Name	Date of Construction	Past Building Number(s)	Historic Building Name(s) Original Design Use Description	Current Building Use	Past Building Use
204	Driver Testing Office & Garage Motor Pool	1920	794/821	Truck Garage	Motor Repair Shop	Truck Garage
205	Supply Services	1919	9	School Building	Support Services and Administration	School
206	NCO Club	1919	750/751	Currative Shop	Temporary Morgue	Rehabilitation/Education/Print Shop
207	Preventive Maintenance Shop	1920	817	Red Cross Warehouse	Maintenance Shop	Medical Supply Warehouse/Paint Shop
208	Storage Shed	1930	857	Ladder Shed	Paint Storage	Ladder Shed in 1942/Storage
209	DPW Paint Storage	1920	790	Paint Shop	Paint Shop	Paint Shop
210	Scale House	1918	701	Laboratory Annex	Scale House	Laboratory Research on Animals
211	Warehouse	1921	848	Quartermaster Storehouse	Warehouse	Warehouse - Shipment by Railroad
212	Maintenance Shop/Administration	1918	732,733	Storehouses	Maintenance Shop	Storehouse/Poison Room
213	Refrigeration and Air Conditioning	1918	19	Ice Plant/Refrigeration Plant	Meat Cutting Plant	Cold Storage/Ice Making - Shipment by Railroad
215	Powerhouse	1918	15	Powerhouse	Powerhouse	Powerhouse - Coal fired until 1930
216	Powerhouse Fuel Farm			Fuel Farm	Fuel Farm	Fuel Farm
217	General Storehouse	1919	776	Transformer House	Storehouse	Transformer House
219	Substation Building	1944	903	Substation	Substation	Substation
220	Youth Center	1940	451	Gymnasium	Recreation	Recreation including a Gym, Bowling Alley, Washrooms
221	Hospital Core	1918	17	Barracks	General Instruction	Residential
222	Hospital Core	1918	17	Barracks	Administration	Residential
223	Hospital Core	1918	17	Barracks	Administration	Residential
224	Hospital Core - General Instruction	1918	17	Barracks	General Instruction	Residential
225	OCHAMPUS	1919	771	Barracks-E	Administration	Residential
226	Audio-Visual Support Center	1941	458	Storeroom	Administration	Storeroom
227	Water Pump Station	1939	902	Booster Pump Station	Water Pump Station	Water Pump Station
228	Entomology Division Laboratory and Military Dogs	1918	14	Guard House	Entomology Laboratory and Military Dogs	Guardhouse
229	General Storehouse	1920	703	Fire Equipment House	Veterinary Storehouse	Fire Equipment Storage/Military Dog House
230	Former Gasoline Station - Demolished	1923		Gasoline Station	Demolished	Oil House/Gasoline Station
231	Water Well Pump Building	1947		Well Pump Building	Water Well Pump Building	Water Well Pump Building
232	Reservoir	1922	860	Artesian Well	Reservoir - Out of Use	Artesian Well
233	Softball Field Restrooms	1948		Softball Field Restrooms	Restrooms	Restrooms
234	Dugout - Softball Field 1	1950		Dugout - Softball Field 1	Dugout - Softball Field 1	Dugout - Softball Field 1
235	Scorekeeper/Storage at Field 1	1983		Recreational Facility	Recreation	Recreation
236	Dugout - Softball Field 1	1950		Dugout - Softball Field 1	Dugout - Softball Field 1	Dugout - Softball Field 1
237	Bleachers - Softball Field 1	1953		Bleachers - Softball Field 1	Bleachers - Softball Field 1	Bleachers - Softball Field 1
238	Baseball Field	1920	861	Baseball and Athletic Field	Recreation	Recreation
239	Former Post Water Tower - Demolished	1947		Post Water Tower	Demolished	Post Water Tower
240	Blachers - Softball Field 1	1953		Blachers - Softball Field 1	Blachers - Softball Field 1	Blachers - Softball Field 1
241	Softball Field - Field 2	1945		Softball Field - Field 2	Softball Field - Field 2	Softball Field - Field 2
242	Softball Field - Field 3	1963		Softball Field - Field 3	Softball Field - Field 3	Softball Field - Field 3
243	Corrosive/Acid Material Storage	1944	882	Farm Implement Building	Storehouse for Hazardous Material	Post Exchange Warehouse
244	Flammable Material Storage	1943	537	Flammable Storage House	Storehouse for Hazardous Material	Storehouse
245	Warehouse - Demolished			Warehouse	Demolished	Warehouse
246	General Storehouse	1921	845	Wagon Shed with Offices	Storehouse	Wagon Shed
247	Warehouse and Loading Dock	1919	20	Quartermaster Storehouse	Warehouse	Storehouse for Medical Supplies
248	General Storehouse	1921	846	Wagon Shed with Offices	Storehouse	Wagon Shed anf Grain Storage
249	Warehouse and Loading Dock	1919	20	Quartermaster Storehouse	Warehouse	Storehouse for Medical Supplies
250	Old Linen Storage	1918	801	Salvage Building	Storehouse	Salvage Building
251	Plumbers' Storehouse	1918	543	Salvage Shed	Storehouse	Salvage Shed in 1940s
252	Storage Shed	1960		Engineering/Maintenance Facility	Storehouse	Storage Shed
253	Chlorine Storage	1921	576	Tool Shed	Storehouse	Tool Shed in 1940s
254	Fire Department Storehouse - Demolished	1921		Civilian Residence	Demolished	Fire Department Storehouse/Civilian Residence in 1940s
255	Golf Cart Barn - Demolished	1921		Horse Stables	Demolished	Golf Cart Storage
256	Demolished	1921		Stables	Demolished	Saddle Horse Stables
257	Demolished	1922		Isolation Stable	Demolished	Isolation Stable
260	Univ. of Colorado Perinatal Research Laboratory (not owned by FAMC)	1987		Univ. of Colorado Perinatal Research Laboratory	Perinatal Research	Perinatal Research
261	Refuse Collection/Transfer Building	1991		Hazardous Waste Storage	Hazardous Waste Storage	Incinerator Equipment
262	DPW Compound - Administration - Under Construction	1995		DPW Compound - Administration	Under Construction	DPW Compound - Administration
263	Wash Platform	1957		Wash Platform	Wash Platform	Wash Platform
264	Autoclave (Former Incinerator)	1961		Refuse/Garbage Building	Autoclave	Incinerator from 1961-1975

TABLE 3.1 (Continued)
LIST OF FAMC BUILDINGS
ENVIRONMENTAL BASELINE SURVEY
FITZSIMONS ARMY MEDICAL CENTER
AURORA, COLORADO

Current Building Number(s)	Current Building Name	Date of Construction	Past Building Number(s)	Historic Building Name(s) Original Design Use Description	Current Building Use	Past Building Use
265	Wastewater Treatment Plant (Former Incinerator)	1918		Sewage Disposal Plant/Incinerator	Sewage Treatment	Sewage Treatment/Incinerator from 1977-1982
266	Wastewater Treatment/Recirculation	1978		Sewage/Waste Water Treatment	Sewage Treatment/Recirculation	Sewage Treatment/Recirculation
267	Wastewater Treatment/Contact Chamber	1978		Sewage/Waste Water Treatment	Sewage Treatment/Contact Chamber	Sewage Treatment/Contact Chamber
270	Automobile Service - Marty's Garage	1938		Auto Skill Center	Maintenance Shop	Automobile Service Garage-Marty's Garage
271	Reservoir for Discharge of Wastewater Treatment Plant	1941		Reservoir for Discharge of Wastewater Treatment Plant	Reservoir	Reservoir
272	Reservoir Overflow	1978		Reservoir Overflow	Reservoir	Reservoir
273	Water Pumps	1978		Water Pumps	Water Pumps	Water Pumps
275	Golf Course Pump House	1978		Water Supply Building	Water Pumphouse	Water Pumphouse
276	Wastewater Treatment Facility/Storage	1938		Sewage/Wastewater Treatment	Chlorine Equipment Storage	Storehouse
280	Scorekeeper - Dugout Softball Field 2	1983		Scorekeeper - Dugout Softball Field 2	Scorekeeper - Dugout Softball Field 2	Scorekeeper - Dugout Softball Field 2
281	Dugout Softball Field 2	1983		Dugout Softball Field 2	Dugout Softball Field 2	Dugout Softball Field 2
282	Dugout Softball Field 3	1982		Dugout Softball Field 3	Dugout Softball Field 3	Dugout Softball Field 3
283	Dugout Softball Field 3	1982		Dugout Softball Field 3	Dugout Softball Field 3	Dugout Softball Field 3
284	Bleachers Softball Field 3	1982		Bleachers Softball Field 3	Bleachers Softball Field 3	Bleachers Softball Field 3
285	T-Ball Field	1990		T-Ball Field	T-Ball Field	T-Ball Field
287	DPW Compound Vehicle and Pipe Shed - Under Construction	1995		DPW Compound Vehicle and Pipe Shed	Under Construction	DPW Compound vehicle and Pipe Shed
288	DPW Maintenance Shop - Under Construction	1995		DPW Maintenance Shop	Under Construction	DPW Maintenance Shop
289	DPW Warehouse - Under Construction	1995		DPW Warehouse	Under Construction	DPW Warehouse
290	Central Energy Plant - Under Construction	1995		Central Energy Plant	Under Construction	Central Energy Plant
300	USAMEOS Domitory	1964		Enlisted Housing	Residential/Company Headquarters	Residential
301	Smith Hall Medical Center Brigade	1985		Enlisted Housing	Residential	Residential
302	Housing	1985		Enlisted Housing	Residential	Residential
303	Conley Hall	1974		Enlisted Housing	Residential/Company Headquarters	Residential
304	BBQ Area	1985		BBQ Area	BBQ Area	BBQ Area
312	Tennis Courts	1948		Tennis Courts	Tennis Courts	Tennis Courts
313	Wash Platform - Demolished			Wash Platform	Demolished	Wash Platform
314	General Storehouse	1955		General Storehouse	Storehouse	Storehouse
315	Post Publication	1942	65	Storehouse	Storehouse	Storehouse for Technician's School
316	DOIM Adminstration and Print Plant	1942	62	Barracks	Copy Center/Administration	Residential
317	Administration General Purpose	1942	63	Telephone & Recreation	Administration	Recreation & Residential
318	Selective Service - Administration	1942	64	Barracks	Administration	Residential
320	Enl. Barrracks - Annual Training	1942	59	Barracks	Residential	Residential
321	Enl. Barracks - Annual Training	1942	60	Barracks	Residential	Residential
322	OCHAMPUS/DOIM - Administration	1942	61	Barracks	Administration	Residential
323	Bowling Center	1942	755	Mess Hall	Bowling Center	Mess Hall for Technician's School/Skating Rink in 1950s
324	Enl. Barracks - Annual Training	1942	56	Barracks	Residential	Residential
325	General Storehouse	1942	57	Recreation	Storehouse	Recreation & Residential
326	Army Reserve Control - USARF	1942	58	Barracks	Administration	Residential
327	USARAMEDD	1942	50	Post Exchange	Offices	Post Exchange
328	Deputy - Veterinary Activities	1942	51	Post Exhange & Post Office	Administration	Post Exchange
329	Thrift Shop	1942	52	Barracks	Thrift Shop	Residential
331	Army Reserve Control - USARF	1942	54	Barracks	Administration	Residential
332	General Instruction Building	1942	42	Administration Building	Administration	Administration
333	General Storehouse	1942	43	Theater	Storehouse	Theater/School Facilities in 1955
334	Army Reserve Center	1942	44	Medical Section	Administration	School Facilities in 1955
336	RV Camp Sites			RV Camp Sites	RV Camp Sites	RV Camp Sites
337	Thrift Shop	1942	47	Barracks	Thrift Shop	Residential
338	Storehouse	1942	48	Storehouse	Storehouse	Residential
339	Army Reserve Control - USARF	1942	49	Barracks	Administration	Residential
340	Expert Field Medical Badge Training Center	1942	34	Infirmary	Instructional	Infirmary
341	Heat Plant Building	1942	29	Pumphouse	Pumphouse	Pumphouse
342	Running Track	1989		Running Track	Running Track	Running Track
400	Officers' Quarters	1943	202	Nurse's Quarters	Residential	Residential
401	Officers' Quarters	1943	205	Nurse's Quarters	Residential	Residential
402	Officers' Quarters	1943	208	Nurse's Quarters	Residential	Residential
403	Gastrointerology Clinic	1942	203	Infirmary Ward	Hospital Clinic	Hospital Infirmary Ward
404	Opthamology Clinic	1942	206	Infirmary Ward	Hospital Clinic	Hospital Infirmary Ward

TABLE 3.1 (Continued)
LIST OF FAMC BUILDINGS
ENVIRONMENTAL BASELINE SURVEY
FITZSIMONS ARMY MEDICAL CENTER
AURORA, COLORADO

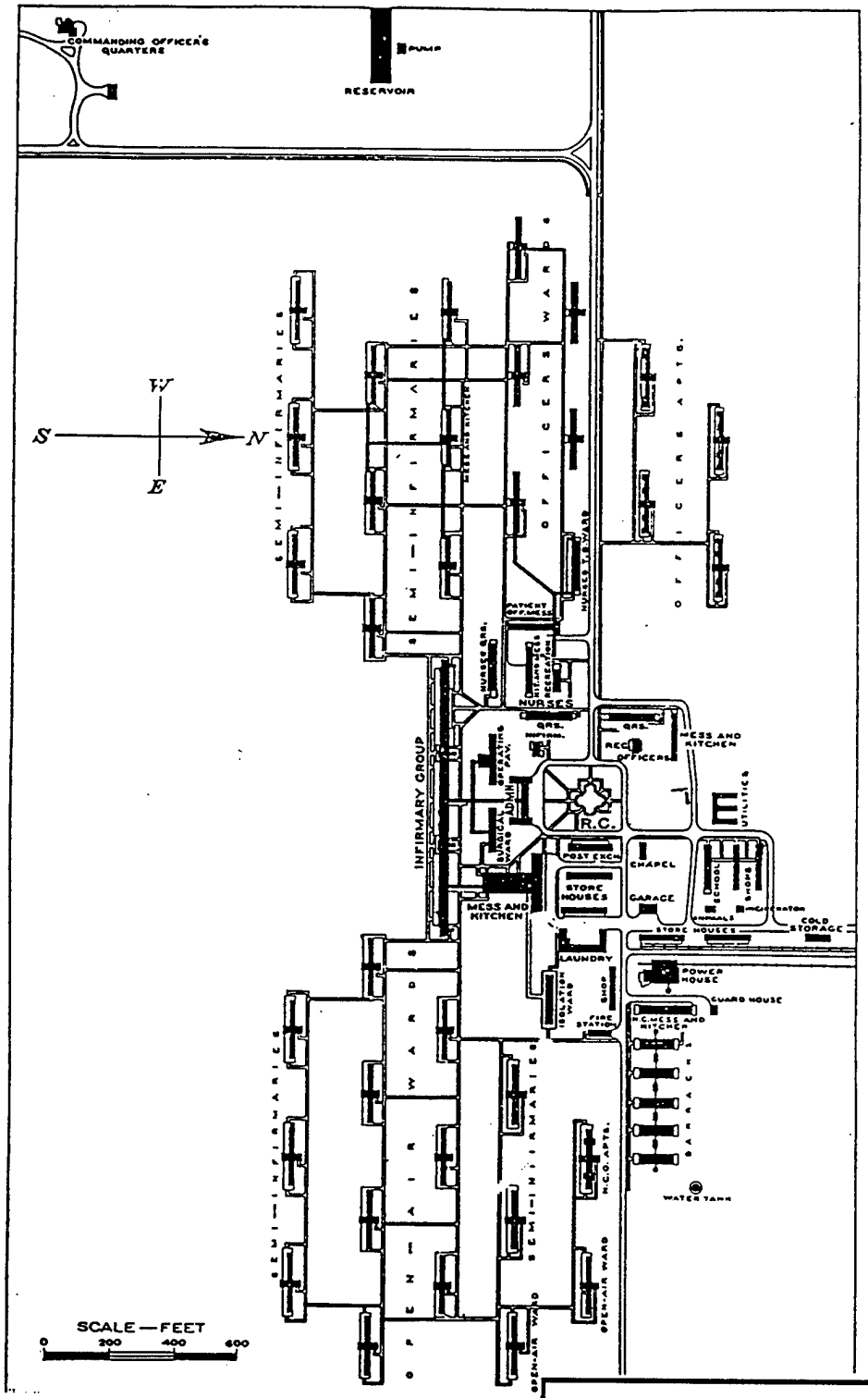
Current Building Number(s)	Current Building Name	Date of Construction	Past Building Number(s)	Historic Building Name(s) Original Design Use Description	Current Building Use	Past Building Use
405	Allergy Immunology Clinic	1918	738	TB Ward	Hospital Clinic	TB Ward/Radioactive Waste Storage
406	Officers' Quarters	1942	211	Nurse's Quarters	Residential	Residential
407	Officers' Quarters	1942	214	Nurse's Quarters	Residential	Residential
408	Outpatient Clinic	1945	215	Personnel Offices Addition	Hospital Clinic	Administration
409	Medical Records Outpatient Clinic	1918	735	TB Ward	Office Clinic	TB Ward/Mess and Kitchen in 1920
410	Pharmacy	1918	736	TB Ward	Pharmacy	TB Ward
411	Fisher House	1993		Fisher House	Residential	Residential
412	Reviewing Stand at Parade Field	1968		Reviewing Stand at Parade Field	Reviewing Stand at Parade Field	Reviewing Stand at Parade Field
413	Child Development Center	1944	218	Nurse's Recreation Hall	Storage	Recreation/Child Development Center
414	Parade Field Bleachers	1968		Parade Field Bleachers	Parade Field Bleachers	Parade Field Bleachers
415	Parade Field Bleachers	1968		Parade Field Bleachers	Parade Field Bleachers	Parade Field Bleachers
416	Child Development Center	1943	219	Hospital Nurse's Mess	Storage	Mess Hall/Child Development Center
417	Internal Medicine	1918	723	Officer's TB Ward	Hospital Clinic	TB Ward
418	Dermatology Clinic	1918	724	Officer's TB Ward	Hospital Clinic	TB Ward
419	Visiting Officer Quarters	1942	223	Bachelor Officer Quarters	Residential	Residential
420	NCO Family Quarters	1919	764	TB Ward	Residential	TB Ward
421	U.S. Army Readiness Group	1919		TB Ward	Residential	TB Ward
422	Chapel Center	1919	781	Nurse's Infirmary	Chapel	Infirmary
423	General Purpose Playground	1919		General Purpose Playground	General Purpose Playground	General Purpose Playground
424	Parade Field	1918		Parade Field	Parade Field	Parade Field
425	Information Sign			Information Sign	Information Sign	Information Sign
500	Main Hospital	1941		Main Hospital	Main Hospital	Main Hospital/Incinerator from 1941-1977
501	Flagpole	1941		Flagpole	Flagpole	Flagpole
502	Orthopedic/Podietry Clinic	1919	760	Semi-Infirmary/TB Ward	Hospital Clinic	TB Ward
503	Pulmonary Hematology, Oncology, Rheumatology Clinic	1918	739	Ambulant TB Ward	Hospital Clinic	TB Ward
504	Office of Provost Marshall	1919	757	Semi-Infirmary/TB Ward	Police Station	TB Ward/Neuro-psychiatric ward in 1924
505	Dental Clinic	1918	743	Infirmary Ward	Administration/Dental Clinic	TB Ward until 1940s
506	Well Child Clinic	1918	725	Officer/Patient Mess & Kitchen	Hospital Clinic	Mess Hall & Kitchen
507	Pediatrics/Pathology/Pharmacy	1918	769	Nurses Quarter's	Hospital Clinic	Residential/in 1923 Converted to Surgical Ward
508	Administration/Storage	1918	715/719	Nurse's Mess & Kitchen, Nurse's Recreation	Administration/Storage	Mess & Kitchen, Recreation/Library
509	Administration - General Purpose	1918	714	Nurse's Quarters	Administration	Residential
510	Records Management Storage	1918		Pharmacy	Storage	Pharmacy Station/Exchange Outlet/Drycleaners
511	Medical Clinic Administration/Nuclear Medicine	1918	30	TB Ward	Medical Clinic	TB Ward/Infirmary
513	Housekeeping	1944	313	Dental Laboratory	Housekeeping	Dental Laboratory
514	Dental Clinic	1918	8	Operating Pavillion	Dental Clinic	Operating Pavillion
515	Hospital Clinic/Photolab	1918	7	General Administration/Hospital Clinic/Dry Cleaner	Hospital Clinic	Admin/Hospital Clinic/Photographic Lab/Dry Clean
516	Family Health Information Center	1944	312	Central Service Building	Patient Library	Administration/Central Service Building for the Post in 1946
517	Occupational Therapy	1918	717	Physiotherapy/Electrocardiogram Department	Occupational Therapy/Prosthetics	Hospital Clinic
519	Flammable Material Storage	1931	884	X-Ray Film Storage	Flammable Material Storage	X-Ray Film Storage/Chemical Storage
520	Commissary	1918	705	General Mess & Kitchen	Commissary	Mess Hall & Kitchen
521	Theater/Finance & Accounting	1943	325	Theater	Theater/Administration	Theater/Print Shop
523	Memorial - Charlie Kelly	1993		Memorial - Charlie Kelly	Memorial - Charlie Kelly	Memorial - Charlie Kelly
524	Red Cross Building	1918	12	Red Cross Building	Red Cross/Pathology	Red Cross
525	Memorial	1918		Memorial	Memorial	Memorial
526	Communications Center	1918	727	Post Exchange	Communication Center	Post Exchange/Bank/Post Office/Community Center
527	Commissary/Office	1918	770	Storehouse	Commissary/Office	Storehouse/Shoe Repair Shop
528	Medical Dept. Office and Stores Warehouse	1918	13	Storehouse	Warehouse/Company Headquarters	Storehouse
529	Laundry	1918	713	Laundry/Dry Cleaners	Laundry	Laundry/Dry Cleaners/Hazardous Waste Storage from 1991-1993
530	Military Clothing	1918	730	Workshop	Clothing Store	Workshop/Print Shop/Furniture Repair Shop
531	Firehouse	1942	16	Firehouse	Firehouse	Firehouse
532	Power Plant Building	1986		Power Plant Building	Power Plant Building	Power Plant Building
533	Linear Accelerator	1985		Medical Center/Hospital	Accelerator	Accelerator
534	Angiography Suite	1993		Medical Center/Hospital	Angiography	Angiography
600	DCI Laboratory and Audiology	1918	744	TB Ward	Laboratory/Administration	TB Ward until 1940s
601	Laboratory	1942	402	Hospital Ward	Laboratory	Hospital Ward
602	Laboratory	1942	403	Hospital Ward	Laboratory	Hospital Ward
603	ADP/USAEHA/Radiation Protection Waste Storage	1918	745	TB Ward	Administration/Radioactive Waste Storage	TB Ward

TABLE 3.1 (Continued)
LIST OF FAMC BUILDINGS
ENVIRONMENTAL BASELINE SURVEY
FITZSIMONS ARMY MEDICAL CENTER
AURORA, COLORADO

Current Building Number(s)	Current Building Name	Date of Construction	Past Building Number(s)	Historic Building Name(s) Original Design Use Description	Current Building Use	Past Building Use
604	General Instruction	1942	407	Hospital Ward	Instruction	Hospital Ward
605	General Instruction	1942	408	Hospital Ward	Instruction	Hospital Ward
606	General Instruction	1942	409	Hospital Ward	Hospital Clinic	Hospital Ward
607	Flammable Material Storehouse	1971		Flammable Material Storage	Vacant	Flammable Material Storage/Hazardous Waste Storage
608	Staff Judge Advocate Office	1942	411	Neuro-Psychiatric Ward	Administration	Hospital Ward
609	Administration	1942	413	Neuro-Psychiatric Ward	Administration	Hospital Ward
610	Medical Research Laboratory	1983		Medical Research Laboratory	Medical Research Laboratory	Medical Research Laboratory
611	OCHAMPUS	1918	741	TB Ward	Administration	TB Ward
612	USAMEOS Technical Training	1942	420	Military Housing	Instruction	Military Housing
613	USAMEOS Technical Training	1942	421	Military Housing	Instruction	Military Housing
614	Swimming Pool	1945	423	Swimming Pool	Swimming Pool	Swimming Pool
615	Incinerator Smoke Stack	1935		Incinerator Smoke Stack	None	Smoke Stack
616	Incinerator/Hazardous Waste Staging Facility	1935	424	Trash Incinerator Building	None	Incinerator
617	Fixed BBQ Outdoor	1994		Fixed BBQ Outdoor	Fixed BBQ Outdoor	Fixed BBQ Outdoor
618	OCHAMPUS Office	1919	752	Semi-Infirmary/TB Ward	Administration	TB Ward/Psychiatric Ward in 1924
619	ACES Facility	1919	753	Semi-Infirmary/TB Ward	Education	TB Ward
620	Child Adolescent Psychiatric Service	1941	29	Barracks	Hospital Clinic	Residential
621	Hospital Clinic	1941	28	Barracks	Hospital Clinic	Residential/Kindergarden Classes in 1962
622	Administration	1941	27	Barracks	Administration	Residential/Kindergarden Classes in 1962
623	Physical Fitness	1944		Physical Fitness	Physical Fitness	Physical Fitness
625	Incinerator - Demolished	unknown	unknown	Incinerator	Demolished	Incinerator
626	Basketball Court - Outside Gym	1945		Basketball Court - Outside Gym	Basketball Court - Outside Gym	Basketball Court - Outside Gym
627	Handball Court - Outside Gym	1945		Handball Court - Outside Gym	Handball Court - Outside Gym	Handball Court - Outside Gym
628	Optical Equipment and School/Laboratory	1971		Optical Fabrication Laboratory/Education	Optical Fabrication Laboratory/Administration	Optical Fabrication Laboratory/Administration
630	OCHAMPUS Print Plant	1941		Print Plant	Administration	Print Plant
631	Barracks	1941	30	NCO Quarters	Residential	Residential
632	NCO Family Housing	1919	772	Semi-Infirmary TB Ward	Residential	TB Ward
633	Garage	1935	886	Garage	Garage	Garage
634	Quade Conference Center	1941	26	Recreation/Theater	Auditorium	RecreationTheater
635	Quade Center Annex	1942	66	Bachelor Officers' Quarters	Administration	Residential
636	Enlisted Barracks	1941	25	Officers' Quarters	Residential	Residential
637	Student Company Medical Holding Company	1941	24	Officers' Mess	Personnel	Mess Hall
638	Enlisted Barracks	1941	23	Officers' Quarters	Residential	Residential
639	Playground	1989		Playground	Playground	Playground
640	Gazebo	1989		Gazebo	Gazebo	Gazebo
641	Fitzsimons Federal Credit Union (not owned by FAMC)	1993		Credit Union	Credit Union	Credit Union
642	Consolidated Club	1995		Consolidated Club	Consolidated Club	Consolidated Club
700	Family Housing	1962		Family Housing	Residential	Residential
701	Family Housing	1962		Family Housing	Residential	Residential
702	Family Housing	1962		Family Housing	Residential	Residential
703	Family Housing	1962		Family Housing	Residential	Residential
704	Family Housing	1962		Family Housing	Residential	Residential
705	Family Housing	1962		Family Housing	Residential	Residential
706	Family Housing	1962		Family Housing	Residential	Residential
707	Family Housing	1962		Family Housing	Residential	Residential
708	Family Housing	1962		Family Housing	Residential	Residential
709	Family Housing	1962		Family Housing	Residential	Residential
710	Family Housing	1962		Family Housing	Residential	Residential
711	Family Housing	1962		Family Housing	Residential	Residential
712	Family Housing	1962		Family Housing	Residential	Residential
713	Family Housing	1962		Family Housing	Residential	Residential
714	Family Housing	1962		Family Housing	Residential	Residential
715	Family Housing	1962		Family Housing	Residential	Residential
716	Family Housing	1962		Family Housing	Residential	Residential
717	Family Housing	1962		Family Housing	Residential	Residential
718	Family Housing	1962		Family Housing	Residential	Residential
719	Family Housing	1962		Family Housing	Residential	Residential

TABLE 3.1 (Continued)
LIST OF FAMC BUILDINGS
ENVIRONMENTAL BASELINE SURVEY
FITZSIMONS ARMY MEDICAL CENTER
AURORA, COLORADO

Current Building Number(s)	Current Building Name	Date of Construction	Past Building Number(s)	Historic Building Name(s) Original Design Use Description	Current Building Use	Past Building Use
720	BOQ Military - Female	1959		VOQ Military	Residential	Residential
721	BOQ Military - Female	1959		VOQ Military	Residential	Residential
722	BOQ Military - Female	1959		VOQ Military	Residential	Residential
723	BOQ Military - Female	1959		VOQ Military	Residential	Residential
724	Fixed BBQ Outdoors	1959		Fixed BBQ Outdoors	Fixed BBQ Outdoors	Fixed BBQ Outdoors
725	Fixed BBQ Outdoors	1959		Fixed BBQ Outdoors	Fixed BBQ Outdoors	Fixed BBQ Outdoors
726	Helipad	1968		Helipad	Helipad	Helipad
727	Sentry Station - Main Gate South	1952		Sentry Station South Gate	Sentry Station	Sentry Station
728	Information Sign - Front Gate	1987		Information Sign - Front Gate	Information Sign - Front Gate	Information Sign - Front Gate
729	Memorial - Sharon A. Lane	1993		Memorial - Sharon A. Lane	Memorial - Sharon A. Lane	Memorial - Sharon A. Lane
730	Playground	1989		Playground	Playground	Playground
750	Playground	1951		Playground	Playground	Playground
751	Playground	1951		Playground	Playground	Playground
800	Family Housing	1962		Family Housing	Residential	Residential
801	Family Housing	1962		Family Housing	Residential	Residential
802	Family Housing	1962		Family Housing	Residential	Residential
803	Family Housing	1962		Family Housing	Residential	Residential
804	Family Housing	1962		Family Housing	Residential	Residential
805	Family Housing	1962		Family Housing	Residential	Residential
806	Family Housing	1962		Family Housing	Residential	Residential
807	Family Housing	1962		Family Housing	Residential	Residential
808	Family Housing	1962		Family Housing	Residential	Residential
809	Family Housing	1950		Family Housing	Residential	Residential
810	Family Housing	1950		Family Housing	Residential	Residential
811	Family Housing	1950		Family Housing	Residential	Residential
812	Playground	1989		Playground	Playground	Playground
816	Burger King (not owned by FAMC)	1991		Burger King	Fast Food Restaurant	Fast Food Restaurant
817	Post-Exchange	1976		Exchange Main Store	Post Exchange	Post Exchange
818	Sewage Lift Station Manhole			Sewage Lift Station Manhole	Sewage Lift Station Manhole	Sewage Lift Station Manhole
819	Sentry Station - Main Gate East	1975		Sentry Station East Gate	Sentry Station	Sentry Station
820	Army Reserve Center	1980		Army Reserve Center	Army Reserve Center	Army Reserve Center
821	Maintenance Facility	1980		Army Reserve Vehicle Maintenance	Maintenance	Maintenance
822	Wash Platform	1980		Wash Platform	Wash Platform	Wash Platform
823	Family Support	1986		Administration, General Purpose	Administration	Administration
824	Child Development Center	1993		Child Development Center	Child Development Center	Child Development Center
825	RTD Park n' Ride (not owned by FAMC)			RTD Park n' Ride	RTD Park n' Ride	RTD Park n' Ride
830	Project Cancelled in Design Phase			Project Cancelled in Design Phase	Project Cancelled in Design Phase	Project Cancelled in Design Phase
845	Project Cancelled in Design Phase			Project Cancelled in Design Phase	Project Cancelled in Design Phase	Project Cancelled in Design Phase
850	General Purpose Playground	1951		General Purpose Playground	General Purpose Playground	General Purpose Playground
851	General Purpose Playground	1970		General Purpose Playground	General Purpose Playground	General Purpose Playground



Sources: Medical Dept. of the U.S. Army in the World War (U.S. Army, 1923).

FIGURE 3.2

ARMY GENERAL HOSPITAL
NO. 21
CIRCA: 1923

Environmental Baseline Survey
Fitzsimons Army Medical Center
Aurora, Colorado

PARSONS ENGINEERING SCIENCE, INC.
Denver, Colorado

building, an exchange, a central infirmary, 12 two-story TB wards, an isolation ward, 4 barracks, 3 storehouses, a chapel, a guardhouse, a laundry, a surgical ward, a shop, and 5 kitchens and messes (War Department, 1923). In October 1918, another 25 buildings were constructed (Fitzsimons Facts, 1992). These buildings were primarily open-air wards, officers' wards, nurses' quarters, a barracks, and a storehouse (War Department, 1923). Additional wards were built later that year as well as a school and two curative shops for physical reconstruction (Covington, No date).

By the end of 1919, 86 tile and hollow-stucco buildings had been constructed (Covington, No date). On 26 June 1920, the facility was redesignated Fitzsimons General Hospital, in honor of William Thomas Fitzsimons, the first U.S. Army officer killed in World War I (Fitzsimons Facts, 1992).

Several construction projects expanded FAMC in subsequent years. In January 1939, construction of the main hospital building began. In October 1938, money was appropriated to construct a railroad to connect FAMC, Lowry Air Force Base, and Buckley Field as a project of the Work Progress Administration. A prisoner of war camp was located on the southeast corner of FAMC property where the Post Exchange is presently located. The camp was razed in 1947 (Fitzsimons Facts, 1992).

FAMC had its own refrigeration and ice making plant, meat packing plant, and botanical garden (Covington, No date). An incinerator, formerly located between Building Nos. 211 and 212, was designed to be used for the incineration of patients' sputum and medical and surgical refuse. The fire brick incinerator had a one-barrel capacity.

Laboratory services that were performed in 1919 included routine analyses, blood chemistry, zoology, histology, and bacteriology.

Potable water was historically supplied by the City of Denver as presently is the case. A water tower provided water storage, and an emergency water storage reservoir held approximately 1,200,000 gallons.

The sewer system had brick manholes and the main trunk line sewer was a 10-inch tile pipe running north 1,700 feet from the center of the grounds, emptying into a concrete septic tank battery with a total capacity of 240,000 gallons. Sludge was removed from the bottom of the chambers and discharged into a neighboring creek through an open ditch. A concrete filter bed received liquid discharge from the septic tank. *(Contrary to what was stated in the document, normal practice would include liquid from the chambers discharged to the creek and the concrete filter bed receiving sludge from the septic tank.)* Distribution mains of the filter bed were connected to 8-inch tile drains leading to the discharge sewer. A storm sewer drained the low ground of FAMC, terminating in an open ditch which emptied into a draw near the septic tank (Covington, no date).

The existing Central Energy Plant provided steam heat to FAMC. Four miles of steam piping in tunnels and trenches were covered with asbestos air-cell pipe insulation. In addition to providing heat for FAMC, the plant furnished steam for use in the laundry.

FAMC has undergone several name changes since its inception as Army General Hospital No. 21. In 1950, Fitzsimons General Hospital was renamed Fitzsimons Army Hospital, and was changed back to Fitzsimons General Hospital in 1960. In 1973, the name Fitzsimons Army Medical Center was chosen (Covington, No date).

Historical Waste Disposal Practices

Several methods of waste disposal have occurred at FAMC since 1918. These methods include incineration, onsite landfilling, disposal to the WWTP, and offsite shipment.

Incinerators have been used at FAMC since it inception to dispose of medical wastes, and it is suspected that other types of waste were also incinerated including municipal solid waste. Five documented landfills have been used to dispose of municipal solid waste, incinerator ashes, construction debris, and radiological wastes at FAMC. Another method of disposal has included discharging liquid wastes to the WWTP. Since 1976, FAMC has not disposed of any solid waste onsite. All municipal solid, hazardous, and radiological wastes have been shipped offsite by licensed haulers.

3.4 TENANT ACTIVITIES

In addition to the organizations that contribute directly to the support of the hospital's medical mission, several tenant activities are located on the installation which receive administrative and logistical support from FAMC. Tenant activities are military and civilian organizations occupying facilities at FAMC who do not directly support the Fitzsimons hospital mission. The two types of tenant activities at FAMC include long-standing tenants who do not have a real estate agreement, and those who have a formal agreement.

Those tenants who did not have a formal real estate agreement in 1993 include the following (FAMC, 1993):

- Office of Civilian Health and Medical Program Uniformed Services (OCHAMPUS). The OCHAMPUS program provides payment for authorized health care services received from civilian providers or non-Uniformed Services facilities by retired personnel, dependents of retired and active personnel of the Army, Navy, Air Force, Marine Corps, U.S. Coast Guard, U.S. Public Health Service, and the National Oceanic and Atmospheric Administration.

- The U.S. Army Medical Equipment and Optical School (USAMEOS). The USAMEOS conducts courses of instruction, evaluates the effectiveness of training courses, and provides technical assistance in the area of biomedical equipment maintenance and optical laboratory technology. USAMEOS trains approximately 700 to 800 students per year in medical equipment repair and optical laboratory specialties. USAMEOS provides the latest technical training in the following three areas; Medical Equipment Repair (Basic); Medical Equipment Repair (Advanced); and Optical Laboratory Specialist. USAMEOS provides Initial Entrance Training (IET) and advanced training in these areas for the Army, Army Reserves, Army National Guard, Navy, Coast Guard, Air Force, selected

U.S. Government employees, and designated personnel from other countries. USAMEOS has 84 instructors and has averaged 490 students per day. This agency is under the jurisdiction of the Academy of Health Services Command, Fort Sam Houston, Texas.

- Air Force Liaison Office. This office provides administrative and command support for Air Force medical patients. The unit functions as the Air Force Physical Evaluation Board Liaison representative advising the hospital staff on all Air Force policies and procedures for disposition of patient personnel.

- Fitzsimons U.S. Army Reserve (USAR) Training Center. The USAR center occupies six buildings totaling 50,559 square feet. The number of military personnel supported by Fitzsimons USAR Training Center is approximately 1300 regular Army and USAR personnel.

- Army Medical Department (AMEDD) Officer Procurement. The Western Region AMEDD Officer Procurement Network assesses qualified health professionals to sustain medical readiness within the Army for a 14-state region.

- United States Army Reserve Army Medical Department (USARAMEDD) Officer Procurement. This organization recruits qualified civilians to serve as health professionals and officers in the U.S. Army Medical Department Officer Program, including the New Specialized Training Assistant Program (New STRAP) and Health Care Professionals-Loan Repayment Program.

- U.S. Army Dental Activity. The Dental Activity (DENTAC) provides dental diagnosis, care, treatment, consultation services and preventive dentistry programs to eligible beneficiaries, such as active- and retired- military personnel, their dependents and other personnel as authorized by the Department of the Army. DENTAC has command and control over dental services at Dugway Proving Ground.

- United States Army Center for Health Promotion and Preventative Medicine (USACHPPM) (formerly USAEHA) Field Support Activity. The USACHPPM provides direct support in the environmental aspects of the Army Preventative Medicine Program to more than 300 Army Installations (active-duty, Reserve, and National Guard) and other DoD facilities in 22 Western States and Alaska. Areas of support include: environmental engineering, industrial hygiene, pest management and other entomology services, and environmental laboratory services.

- Selective Services System Region VI. This office is responsible for directing training programs of assigned Reserve and National Guard Officers and local board members, to ensure a readiness to reconstitute the Selective Service system in the event of a national emergency mobilization. The office directs registration awareness and public affairs programs within the 10-state jurisdiction of the Region.

- Defense Commissary Agency (DeCA). The mission of the Commissary is to operate a resale activity and support the Hospital Food Service Activity. This includes the supervision of ordering, purchasing, receiving, accounting, storing, preparing for sale, displaying, and selling of food and household items to authorized individuals and organizations.

- U.S. Army Readiness Group, Denver. This group assists and advises Army National Guard and Army Reserve units in Colorado, North Dakota, South Dakota, and Wyoming on all aspects of training including doctrine, techniques, plans, readiness, mobilization, and management. This group is on order if the Commanding General Sixth U.S. Army Readiness Group Denver establishes a Mobilization Assistance team at Fort Carson.

- University of Colorado Health Sciences Center Research Program. Fitzsimons is developing a combined research program with the University which will benefit both military and civilian communities in medical research.

- Defense Finance and Accounting Service (DFAS). The DFAS is the "Accounting Firm of DoD." The DFAS provides finance and accounting support to FAMC, tenant organizations, soldiers, and civilians. This includes military pay services, procurement payments, travel payments, funding agents, receiving cash collections for the U.S. Government, payment of entitlements to the Army Health Professionals Scholarship Program students, liaison between the central civilian payroll office and the supported individuals, and maintenance of the official appropriated funds accounting records for supported activities.

- Defense Printing Service (DPS). The DPS is the central printing and publications management organization serving the DoD. Operating on an independent, total cost recovery basis, they produce or procure all the DoD's printing requirements.

- 24th PSYOP Company. This Company supports the attainment of U.S. National objectives abroad, plans and conducts psychological operations in support of military operations, and must be prepared to conduct such operations unilaterally in support of or in coordination with other military services and U.S. Government agencies.

- American Red Cross. The American Red Cross provided professional and volunteer services at FAMC through its Social Service and Recreation Departments. Red Cross social workers provided case work services to help patients and duty personnel with their personal, family, or financial problems. The social workers were a referral source to other specialized welfare agencies.

One additional tenant activity was onsite as of 1973:

- Marine Liaison Office. Established at Fitzsimons by the Commandant of the Marine Corps, the Marine Liaison Office functioned primarily as a liaison between Marine patients returning from combat zones and the senior Marine Corps activity in the Denver area. The office advised the hospital staff on Marine Corps policies and procedures and coordinated medical administrative matters between medical units and Fitzsimons.

In 1985, the *Analytical/Environmental Assessment Report for Future Development Plans* (FAMC, 1985a) accounted for all the tenants listed above, with the exception of the Marine Liaison Office which apparently left FAMC between 1977 and 1985.

Tenants at FAMC who have formal real estate agreements are listed in Table 3.2. In addition, an agreement with the City of Aurora for approximately 2.066 acres in the southeast corner of the installation was in place in 1977. This agreement was for a Chamber of Commerce Information Center, right-of-way to Mountain States Telephone Company for service to acquired Wherry Housing, and rights-of-way to the Public Service Company of Colorado for the power source into FAMC.

Table 3.3 presents outgrants in effect in 1993 (ES&E, 1984).

3.5 PERMITTING/LICENSE STATUS

A summary of the regulatory requirements for FAMC operations is discussed below. These requirements are mandated by federal and state regulations and should be considered during the BRAC process. In addition, FAMC must comply with environmental requirements issued by the DoD. Additional permitting information is presented in Section 5.

3.5.1 Resource Conservation and Recovery Act Status

FAMC is classified as a large quantity generator due to the amount of hazardous waste generated (>100 kg/month of hazardous wastes). The installation does not accumulate hazardous waste for greater than 90 days, nor does it store, treat, or dispose of waste onsite. Consequently, the installation does not have a TSD permit. The hazardous waste accumulation points at FAMC include one at Building No. 500 and one at Building No. 261.

3.5.2 Comprehensive Environmental Response, Compensation, and Liability Act Status

There are no CERCLA actions currently being conducted at FAMC. Review of EPA records indicated that on 15 August 1980, FAMC notified EPA of hazardous waste activity. At that time FAMC was placed on the CERCLIS. In October 1984, FAMC submitted an Installation Assessment and in May 1986, FAMC submitted a Preliminary Assessment of Potential Hazardous Waste Sites to the EPA. On 1 September 1986, EPA rendered a decision that FAMC was not a candidate for the NPL and was considered a NFA Site. FAMC was considered removed from the CERCLIS at that time.

3.5.3 National Pollution Discharge Elimination System Permits

FAMC has had a National Pollution Discharge Elimination System (NPDES) permit since 1988. The existing permit authorizes FAMC to discharge effluent from the WWTP into Tollgate Creek. The current permit was issued on 1 October 1992 and expires on 1 September 1997. More information concerning the NPDES permit is presented in Section 5.2.1. A permit for stormwater discharge is currently being negotiated with the EPA.

TABLE 3.2
REAL ESTATE AGREEMENTS IN EFFECT IN 1993
ENVIRONMENTAL BASELINE SURVEY
FITZSIMONS ARMY MEDICAL CENTER
AURORA, COLORADO

Tenant	Purpose	Location	Year of Issue
Officers' Wives Club	Thrift Shop	Building No. 329	1989
Aurora National Bank	Automatic Teller	Building No. 526	1981
FAMC Federal Credit Union	Credit Union	Building Nos. 119, 526, 823	1982
FAMC Federal Credit Union	Credit Union	1.596 acres	1992
Raymond Hansen	Agricultural	38.69 acres	1991
Regional Transportation District	Park-n-Ride	1.4 acres	1986
University of Colorado	Research Center	14.1 acres	1987
Federal Aviation Administration	Low-Level Wind Shear Alert System	0.005 acres	1989
City of Aurora	Right-of-way	0.3 acres	1986
City of Aurora	Right-of-way	0.4 acres	1975
Mountain States Telephone	Cable Right-of-way	0.5 acres	1951
Mountain States Telephone	Cable Right-of-way	1.4 acres	1967
City of Aurora	Right-of-way	5.6 acres	1984
City of Aurora	Right-of-way	0.8 acres	1987
City of Aurora	Right-of-way		1976
Public Service Company	Power line Right-of-way	0.3 acre	1928
Zachery and Elizabeth Fisher Armed Services Foundation	Construction Fisher House		1992
Mile High Retired Officer's Association	meeting space		1993

TABLE 3.3
OUTGRANTS IN EFFECT IN 1993
ENVIRONMENTAL BASELINE SURVEY
FITZSIMONS ARMY MEDICAL CENTER
AURORA, COLORADO

Tenant	Purpose	Location	Year of Issue
The City of Aurora	Information Booth	2.1 acres	1969
The City of Aurora	Right-of-way	0.4 acre	1975
The City of Aurora	Diversion Structure		1976
Aurora National Bank	Bank	Building No. 526	1981
Mountain States Telephone	Right-of-way	0.5 acre	1951
Mountain States Telephone	Right-of-way	1.4 acres	1967
Officer's Wives Club Shop	Thrift Shop	Building No. 523	1977
Public Service Company of Colorado	Right-of-way	0.3 acre	1928
Federal Credit Union	Credit Union	Building No. 119	1982

3.5.4 Solid Waste Permits

FAMC does not have any solid waste disposal permits. All nonhazardous waste is disposed through Denver Arapahoe Disposal Site and Recycling Center (DADS).

3.5.5 Air Permits

FAMC has several air permits and air pollution emission notices (APENs). Currently, FAMC has a permit for the 4 boilers at the boiler plant and one permit for the paint spray booth in Building No. 209. Three APENs for three small boilers and one for the wastewater treatment plant flare are also present at FAMC. A permit for the boilers at the CEP and an APEN for the pump and treat system at the U.S. Army Air Force Exchange Service (AAFES) Station are pending.

3.5.6 Water Supply Permits

FAMC receives potable water from the City of Denver and does not have any water supply permits. The water well located south of the baseball fields is not registered with the State Engineer's office. This well was installed in 1947. Wells installed prior to 1972 are not required to be registered. Applications for registration of five groundwater monitoring wells were submitted to the State Engineer's office in July 1994.

3.5.7 Underground Storage Tank Registrations

Several USTs at FAMC are registered with the State of Colorado Oil Inspector's Office. The USTs at FAMC are considered removed and closed, removed, not in service, or in service.

3.5.8 Nuclear Regulatory Commission

FAMC has had a license for radioactive material use since 1964. The current license expired in 1990, but is under timely renewal by the NRC.

SECTION 4

SURROUNDING ENVIRONMENT AND LAND USES

4.1 DEMOGRAPHICS

FAMC is located in Aurora, Colorado, a suburb of the Denver Metropolitan Area. The community of Aurora is Colorado's second-largest city with a population of more than 247,288, many of whom are active military, dependents, or civilian employees of the military (City of Aurora Planning Department Technical Services Division, 1996). The demographics for FAMC, the surrounding area, and region are discussed below.

4.1.1 Fitzsimons Army Medical Center

FAMC employs approximately 3,973 military and civilian personnel (TechLaw, 1994). In 1993, there were approximately 1,400 military personnel and their dependents living on-post (FAMC, 1993). Of this, approximately 387 children live in FAMC housing (TechLaw, 1994).

4.1.2 Surrounding Area

FAMC is surrounded by commercial and residential development to the south, west, and east. Recreational open space and Sand Creek Park are located immediately north of the installation. Residential areas located in the vicinity of FAMC include Morris Heights Subdivision, north of Sand Creek Park; Boston Heights Subdivision, west of FAMC; Hoffman Heights Subdivision, south of FAMC; and Altura Subdivision, east of Interstate 225. A trailer park is located directly east of FAMC and east of Tollgate Creek.

Development west of FAMC along Peoria Street, includes gas stations, small shopping centers, restaurants, apartment complexes, commercial businesses, and office buildings. Development south of FAMC along East Colfax Avenue includes gas stations, dry cleaners, office buildings, small shopping centers, restaurants, motels, a mobile home park, and commercial businesses. Development east of FAMC along Potomac Street includes commercial and residential areas.

Some FAMC military personnel and civilian personnel reside in surrounding residential areas. Approximately 4,060 military personnel and their dependents live off-post (FAMC, 1993).

4.1.3 Regional

The Rocky Mountain Front Range Region near Denver has many attributes that will ensure continued development for an indefinite period of time. Denver is one of the fastest-growing communities in the United States with about 500,000 people living within the city limits, and 1.8 million in the metropolitan area (FAMC, 1993). The median age of Denver's population is 29.5 years (FAMC, 1993).

4.2 CLIMATOLOGY

Weather conditions at FAMC are variable, with significant influence exerted by the Rocky Mountains located to the west. The mountains shield FAMC from prevailing westerly wind movement and cause reduced temperature variation and increased precipitation as compared with the plains area farther to the east (ES&E, 1984).

Monthly climatological data in the vicinity of FAMC are presented in Table 4.1. Average monthly temperatures range from a low of approximately 30 degrees Fahrenheit (°F) [-1.2 degrees Celsius (°C)] in January to a high of about 72 °F (22.2 °C) in July. The average precipitation varies from a low of approximately 0.54 inches (in.) (1.37 cm.) in January to a high of 2.56 in. (6.50 cm.) during May (TechLaw, Inc., 1994; ES&E, 1984). The average rainfall is 15.87 in. (40.30 cm.) per year (FAMC, 1993).

4.3 HYDROLOGY

FAMC property is physiographically confined on the east and northeast by Tollgate Creek, a high plains intermittent stream (ES&E, 1984). Tollgate Creek originates as a first-order stream to the southeast of FAMC and enters Sand Creek near the north boundary of FAMC property. Sand Creek is also a typical high plains intermittent creek with flows related to periodic runoff events. Both Tollgate Creek and Sand Creek discharge to the South Platte River approximately 5 kilometers (km) downstream of their confluence.

Runoff originating from the developed areas of FAMC is directed through the storm sewer system and discharged to Tollgate Creek on the north side of FAMC (Area 3 on Figure 4.1). Treated effluent from the WWTP is stored in an effluent lagoon. During the summer (May to October), the entire flow from the lagoon is used to irrigate the golf course and the driving range. From November through April, overflow from the lagoon is discharged to Tollgate Creek near the northern facility boundary and about 150 meters from the confluence with Sand Creek (ES&E, 1984). Surface flows along the eastern and northern areas of FAMC property discharge directly into Tollgate (Area 2 on Figure 4.1) and Sand Creeks (Area 1 on Figure 4.1). The generalized surface water drainage areas of FAMC property are shown on Figure 4.1.

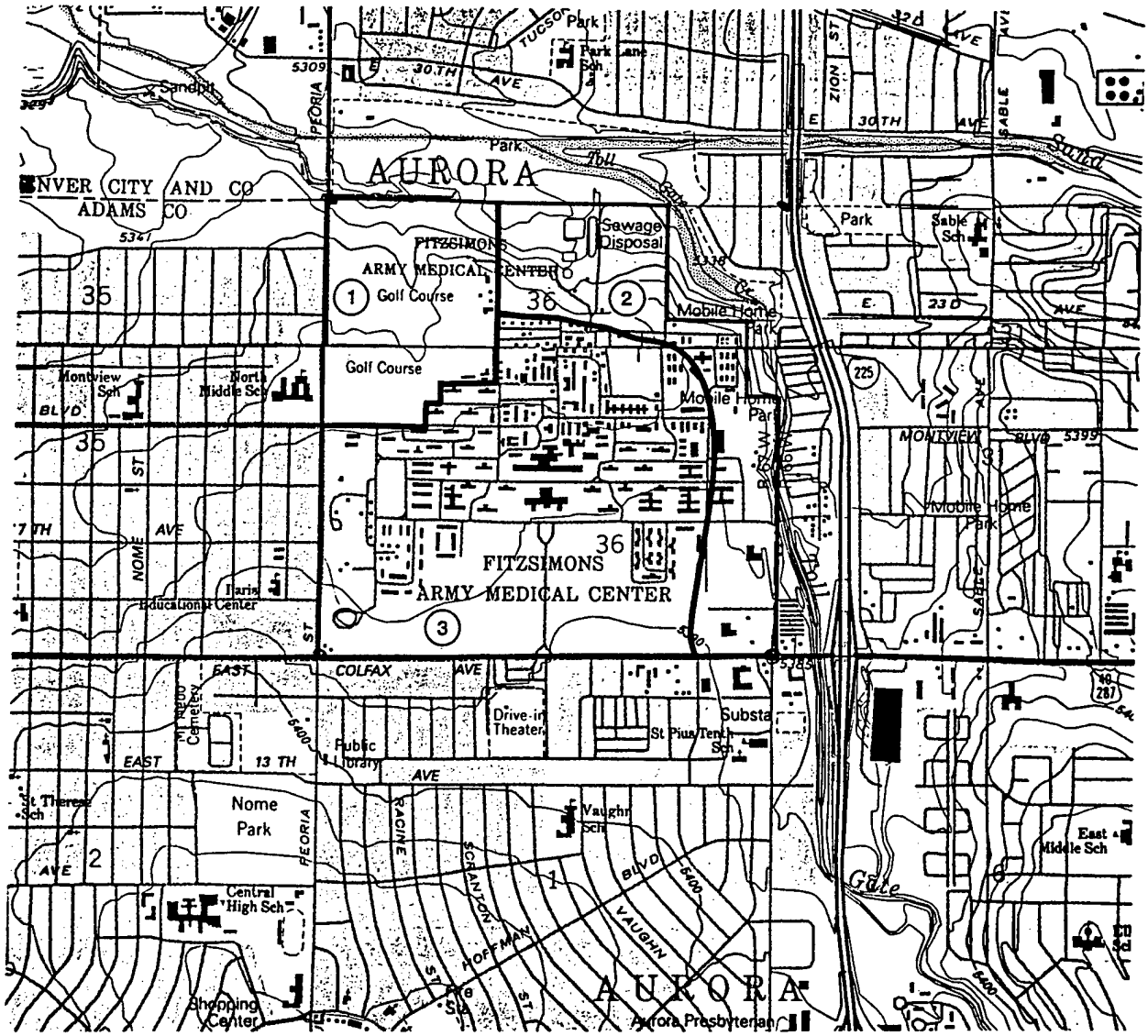
Surface water also collects in a pond at General's Park, located in the southwest corner of FAMC property and in another small pond on the golf course.

TABLE 4.1
MONTHLY AVERAGE CLIMATOLOGICAL DATA IN THE VICINITY OF FAMC
ENVIRONMENTAL BASELINE SURVEY
FITZSIMONS ARMY MEDICAL CENTER
AURORA, COLORADO

Month	Mean Temperature		Mean Precipitation	
	(degrees Fahrenheit)	(degrees Celsius)	(inches)	(centimeters)
January	29.84	-1.2	0.54	1.37
February	32.72	0.4	0.82	2.08
March	37.04	2.8	1.30	3.30
April	47.48	8.6	1.77	4.50
May	57.02	13.9	2.56	6.50
June	66.02	18.9	1.71	4.34
July	71.96	22.2	1.91	4.85
August	71.60	22.0	1.50	3.81
September	62.78	17.1	1.13	2.87
October	51.98	11.1	0.96	2.44
November	39.38	4.1	0.87	2.21
December	32.54	0.3	0.80	2.03
Annual	50.03 (average)	10.0 (average)	15.87 (total)	40.30 (total)

Note: Data was compiled for the years 1935-1991.

Sources: Techlaw, Inc., 1994; Environmental Science and Engineering, Inc., 1984; and U.S. National Climatic Data Center, 1980.



LEGEND

(1) SAND CREEK DRAINAGE

(2) TOLLGATE CREEK DRAINAGE

(3) STORM WATER TO RESERVOIR

DRAINAGE BOUNDARIES

Sources: ES&E, 1984.

FIGURE 4.1

GENERALIZED SURFACE WATER DRAINAGE AREAS

Environmental Baseline Survey
Fitzsimons Army Medical Center
Aurora, Colorado

PARSONS ENGINEERING SCIENCE, INC.
Denver, Colorado

4.4 GEOLOGY AND HYDROGEOLOGY

A description of known geologic and hydrogeologic conditions existing beneath FAMC is summarized below. A detailed facility-wide investigation of local hydrogeologic conditions will be required to provide a greater understanding of the soils, the alluvial aquifer, and the bedrock aquifer system.

4.4.1 Geologic Setting

FAMC property is situated near the center of the Denver Basin. This structural basin feature was derived from a series of tectonic activities originating in the Precambrian era that have continued intermittently to present day (ES&E, 1984). The basin is confined on the west by the Southern Rocky Mountains and on the east by the High Plains (Figure 4.2). The western boundary is composed of steeply upturned sedimentary rocks that abut the crystalline rock complex of the mountains and dip eastward towards the synclinal axis of the basin. The sedimentary rocks are represented by hogback ridges and strike valleys along most of the western flank of the basin. The exception to this exists to the south where the abrupt displacement by the Rampart Range fault has prevented hogback formation except in the Perry Park and Colorado Springs areas. The sedimentary rocks underlying FAMC property dip gently westward toward the synclinal axis of the basin, located approximately 13 km to the east.

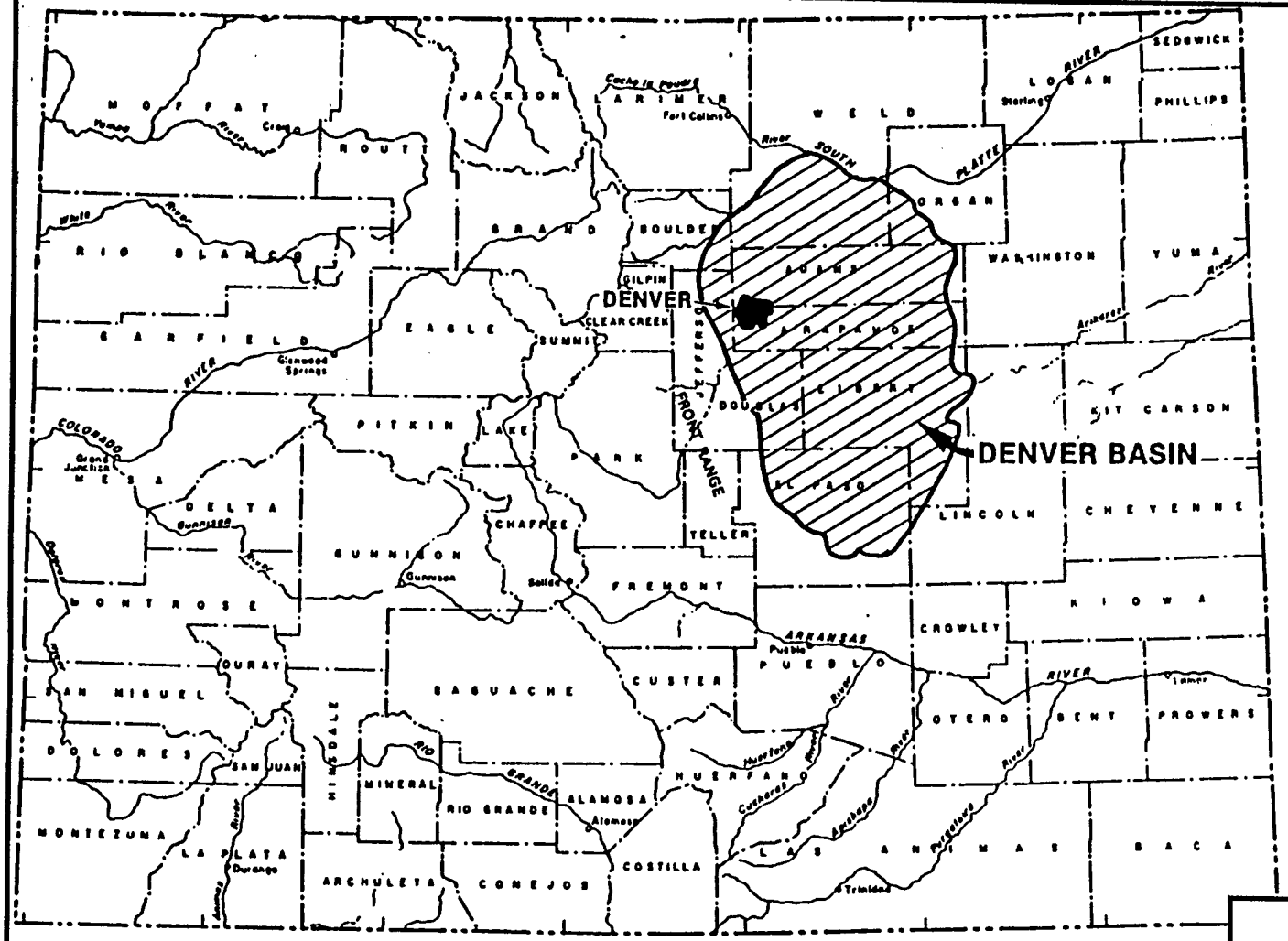
Bedrock units in the area of FAMC are overlain by Quaternary-age deposits. These Quaternary deposits, from oldest to youngest, consist of Slocum Aluvium, Loess, Eolian Sand, Piney Creek Alluvium, and Post-Piney Creek Alluvium.

4.4.2 Soils

Weld Loam. The Weld Loam soil series is found over approximately 60 percent of FAMC property. The Weld Loam consists of well drained, nearly level soil that was formed on eolian deposits. The top soil ranges from 10-20 cm in thickness and from loam to silt in texture (ES&E, 1984). Distribution of soils at FAMC is shown on Figure 4.3.

Ascalon-Vona-Truckton Association. Most of the remaining area comprising FAMC contains the Ascalon-Vona-Truckton soil association, which consists of nearly level to strongly sloping, very well drained, loamy and sandy soils formed as eolian deposits. Within the boundaries of FAMC property, this association is expressed as the Ascalon sandy loam and Truckton loamy sand. Ascalon sandy loam is present over the majority of the FAMC golf course and a narrow band extends eastward across the installation (ES&E, 1984). Truckton loamy sand is present over the northern 20 percent of FAMC property.

Additional Soil Types. Three other soil types have been identified on FAMC property. Occurring at the north and northeast perimeters of FAMC property, these soil types consist of loamy alluvial deposits, terrace escarpment deposits, and sandy alluvial



N

NOT TO SCALE

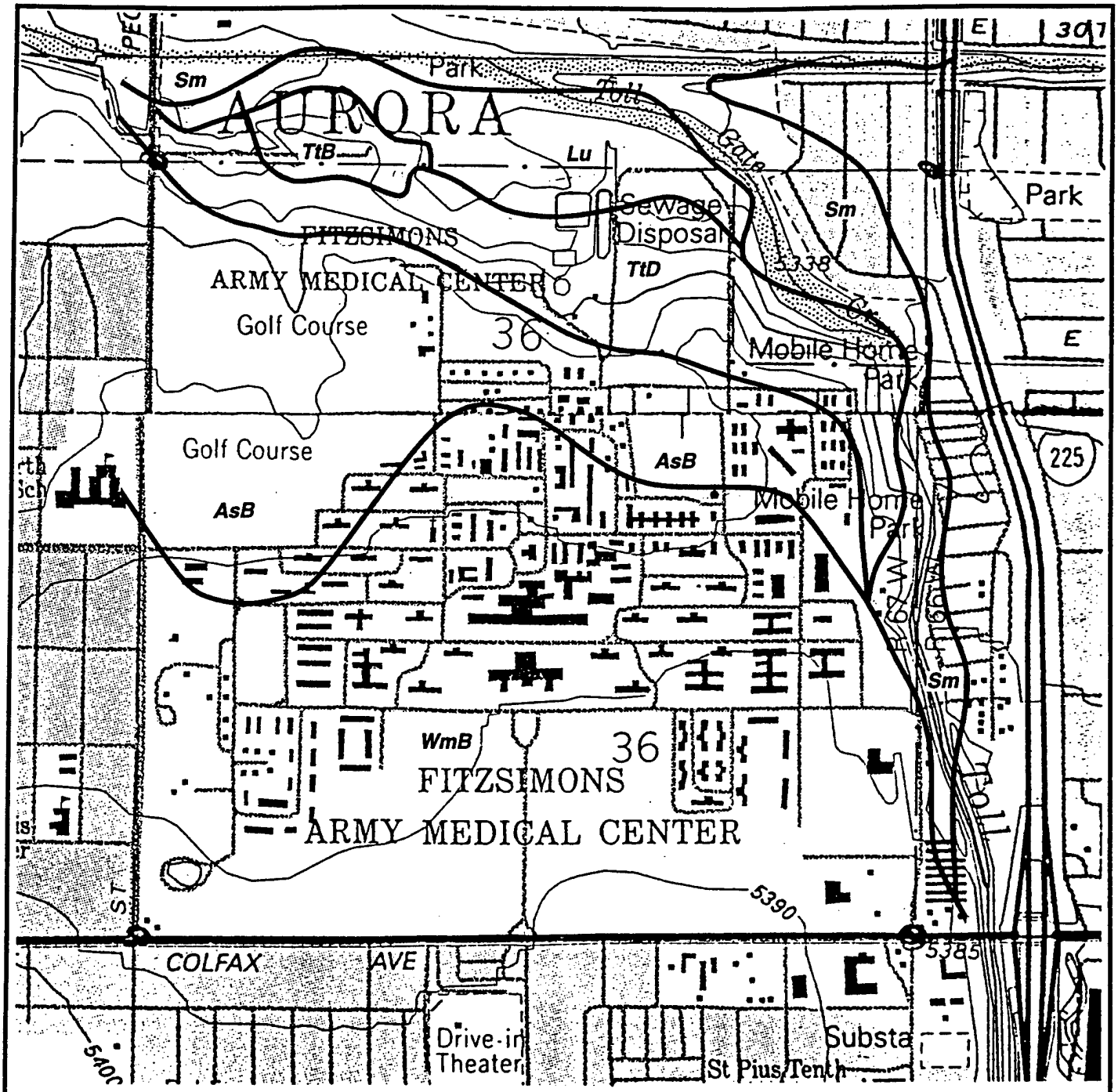
Sources: USGS, 1981

FIGURE 4.2

LOCATION OF DENVER BASIN

Environmental Baseline Survey
Fitzsimons Army Medical Center
Aurora, Colorado

PARSONS ENGINEERING SCIENCE, INC.
Denver, Colorado



LEGEND

TtB	TRUCKTON LOAMY SAND 0 TO 3% SLOPES
TtD	TRUCKTON LOAMY SAND 3 TO 9% SLOPES
Lu	LOAMY ALLUVIAL LAND
Sm	SANDY ALLUVIAL LAND
Tc	TERRACE ESCARPMENTS
AsB	ASCALON SANDY LOAM 1 TO 3% SLOPES
WmB	WELD LOAM 1 TO 3% SLOPES

Sources: ES&E, 1984.

FIGURE 4.3

MAP OF SOILS OCCURRING AT FAMC FACILITY

Environmental Baseline Survey
Fitzsimons Army Medical Center
Aurora, Colorado

PARSONS ENGINEERING SCIENCE, INC.
Denver, Colorado

deposits. The loamy alluvial deposits are comprised of 15 to 25 cm of loam underlain by stratified loam, silt loam, and clay loam containing fine sand, sand, and fine gravel (ES&E, 1984). The terrace escarpment deposits consist of shallow loamy sand alluvium overlying thick sand and gravel sediments. The deposits of sandy alluvium contain stratified sandy and gravelly alluvium.

Several geologic borings have been installed at FAMC to evaluate the soils for the proposed construction of the new main hospital building. Soil boring classification information is available for a large percentage of the installation.

4.4.3 Groundwater

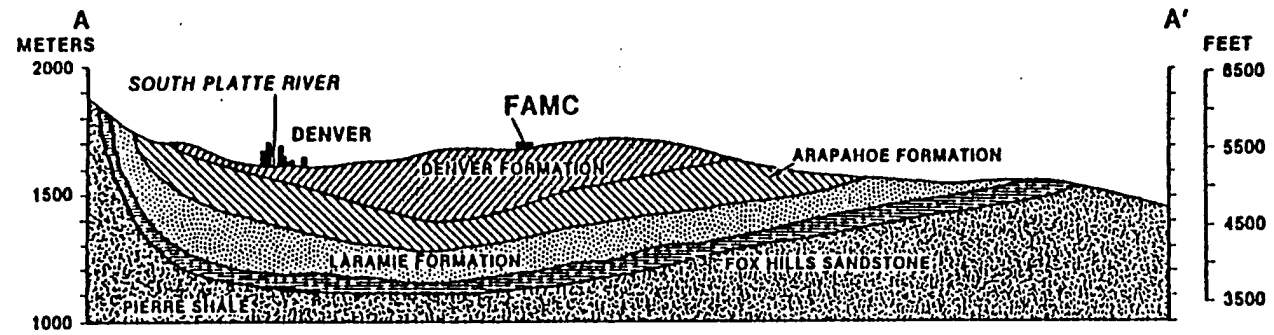
Alluvial Aquifer. The alluvial aquifer at FAMC is contained in the unconsolidated interbedded sands, silts, clays, and gravels. Depth to groundwater averages about 28 feet below ground surface (bgs) with seasonal variation.

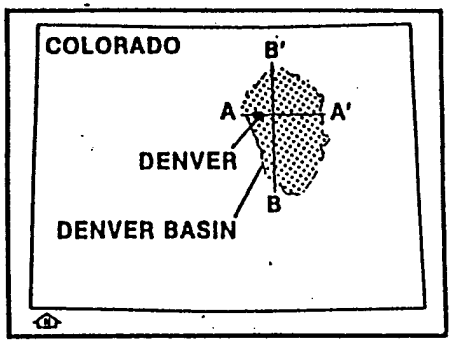
Bedrock Aquifers. The three bedrock aquifers of the Denver Basin are contained in the Fox Hills Sandstone, the Laramie Formation, the Arapahoe Formation (all of Late Cretaceous age) and the Denver Formation (of Late Cretaceous and early Tertiary age). South of FAMC, the Denver Formation is overlain by the Dawson Arkose of Tertiary age. The Late Cretaceous-age Pierre Shale underlies the Fox Hills Sandstone and is considered to be the base of the major bedrock-aquifer system due to its great thickness (up to 2,400 m) and its minimal permeability (ES&E, 1984). These formations are depicted in the generalized geologic cross-sections shown in Figure 4.4.

Denver Aquifer. The Denver aquifer is the uppermost bedrock aquifer in the Denver Basin and underlies FAMC property up to approximately 500 feet bgs. This aquifer is the primary source of water for rural residents in El Paso County, central Elbert County, and the western half of Arapahoe County. This aquifer supports at least 3,700 wells that predominantly serve residents and livestock. Use of water from this aquifer for commercial irrigation is minimal (ES&E, 1984).

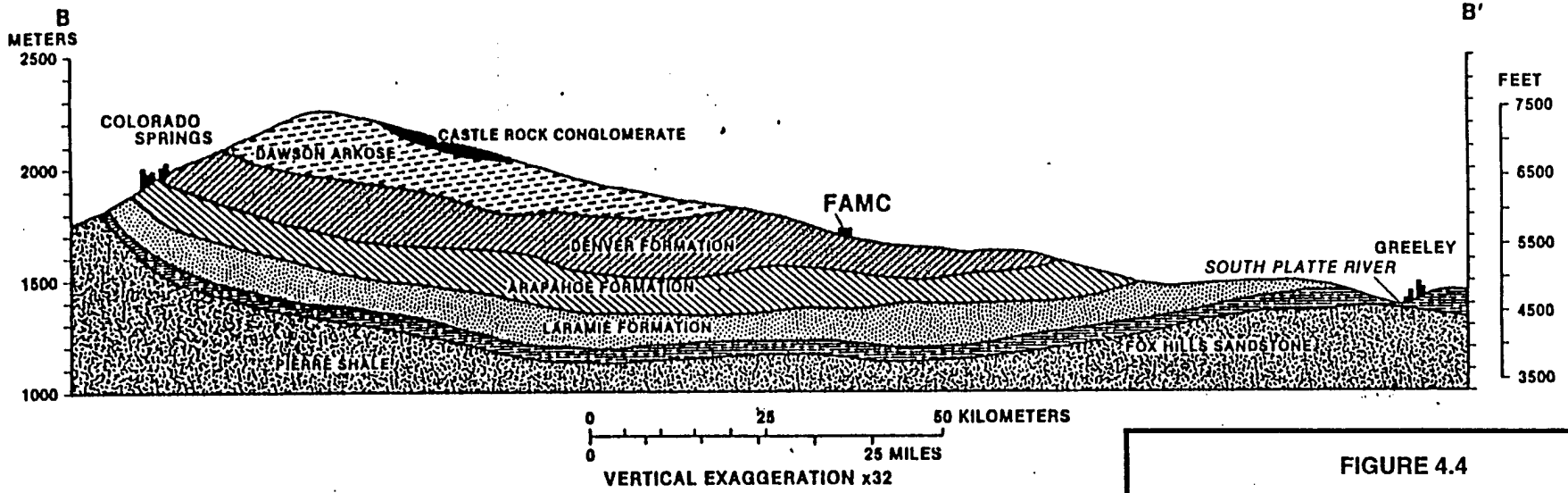
The Denver Formation consists of a 180- to 300-m thick series of interbedded shale, claystone, siltstone, and sandstone in which coal and fossilized plant remains are common. Outcrops occurring along the margins of the aquifer are either exposed at the surface or buried under a thin layer of soil. This formation occurs in other areas buried under 6 to 30 m of sand and gravel, deposited as valley fill in the South Platte River Valley and other small stream cuts.

The water-bearing layers of sandstone and siltstone occur in poorly defined irregular beds that are dispersed within relatively thick sequences of claystone and shale (ES&E, 1984). Sandstone and siltstone layers commonly are lens-shaped and range in thickness from a few centimeters to 15 meters. These layers may be discontinuous between water wells due to this lens-like shape. The sandstone and siltstone are more coarse-grained than the claystone and shale and only moderately consolidated. Thus, groundwater can more easily move through the sandstone and siltstone, while the claystone and shale act as confining layers. This aquifer consists of these interfingered stratified sediments that differ in transmissivity and permeability.





CROSS-SECTION LOCATION



SOURCE: USGS, 1981 .

FIGURE 4.4

UPPER STRATIGRAPHIC SECTIONS OF DENVER BASIN

Environmental Baseline Survey
Fitzsimons Army Medical Center
Aurora, Colorado

PARSONS ENGINEERING SCIENCE, INC.
Denver, Colorado

Arapahoe Aquifer. The Arapahoe aquifer is stratigraphically below the Denver aquifer ranging from 500 to 1,000 feet bgs and has an aerial extent of approximately 11,140 km^2. It is a primary source of water for residents in the east Denver suburban area and in the rural areas of central Adams and El Paso counties, eastern Elbert County, and Arapahoe County. Approximately 90 percent of the reported 3,200 wells supply water to residents and livestock with the remaining wells used for irrigation and commercial uses (ES&E, 1984).

The Arapahoe Formation ranges in thickness from 120 m to 210 m and is made up of conglomerate, sandstone, siltstone, and shale units. In some areas, the formation can be categorized into an upper and lower unit. The upper unit consists of 60 to 90 m of shale with minor conglomerate and sandstone beds. Shale is generally absent from the lower section that is typically composed of 60 to 90 m of sandstone and conglomerate. Moderately consolidated, lens-shaped sandstone and conglomerate beds, ranging in thickness from a few cm to 12 m, form a single hydrologic unit that is 60- to 90-m thick. The geomorphology of the outcrop exposures is very similar to that described for the Denver Formation.

The saturated part of the Arapahoe Formation that forms the Arapahoe aquifer also includes the top section of the Laramie Formation. Water in these upper sediments appears to function hydraulically as part of the Arapahoe aquifer rather than the Laramie-Fox Hills aquifer. Near the margins of the aquifer, the geologic units forming the top of the aquifer are not fully saturated. Because of these unsaturated areas, the perimeter shape of the aquifer does not always correspond to the size, shape, and thickness of the Arapahoe Formation (ES&E, 1984).

Laramie-Fox Hills Aquifer. The Laramie-Fox Hills aquifer is stratigraphically below the Arapahoe aquifer ranging from 1,000 to 1,500 feet bgs and underlies the entire area of the Denver Basin in eastern Colorado. Approximately 90 percent of the 1,700 water wells completed in this aquifer provide water to suburban Denver area and rural residents and livestock of eastern Jefferson, Arapahoe, and Elbert Counties, Adams County, and southern Weld and El Paso Counties. Commercial, industrial, and irrigation uses account for the remaining wells completed in the aquifer.

The Laramie-Fox Hills aquifer occurs in the basal sandstone units as the Laramie Formation and the upper sandstone and siltstone units of the underlying Fox Hills Sandstone. In some areas, the uppermost sections of the Pierre Shale are also included in the Laramie-Fox Hills aquifer. The Laramie-Fox Hills aquifer ranges from not present at the aquifer margin to thicknesses between 60 and 90 m in the central part of the aquifer. The saturated thickness of the Laramie-Fox Hills aquifer within the Laramie Formation is approximately 15- to 30- m thick and is composed of very fine- to medium-grained sandstone with interstitial silt and clay. In the area including FAMC property, the sandstone is separated into upper and lower members by shale beds 3- to 6-m thick. A shale bed 1.5- to 6-m thick commonly separates the units of the Laramie and Fox Hills formations occurring within the aquifer. The 120 to 150 m of Laramie Formation overlying the Laramie-Fox Hills aquifer form an upper boundary for the aquifer. The Pierre Shale forms the base of the Laramie-Fox Hills aquifer. Sandstones and siltstone occurring in the upper part of the shale are, for hydrologic

purposes, considered part of the Laramie-Fox Hills aquifer. Partial saturation occurs at the aquifer boundaries, and therefore in these areas, the Laramie-Fox Hills aquifer is assumed to extend from the base of the aquifer to the potentiometric surface.

4.4.3.1 Groundwater Characteristics

Groundwater flow direction in the Quaternary strata underlying the central and northern portions of FAMC property is generally north-northwest (ES&E, 1984). Aquifer recharge is provided by local precipitation and infiltration from golf course irrigation.

Recharge of the bedrock aquifers occurs in the outcrops as deep infiltration of precipitation in the highland areas between stream channels or as infiltration of water from alluvial aquifers located above the water level of the bedrock aquifer. In the central part of the Denver basin, downward movement of water from overlying aquifers is the principal mechanism for recharge. The majority of water flows laterally through conglomerate, sandstone, and siltstone units from the areas of recharge to areas of groundwater discharge. This occurs on a local scale as water moves from the recharge areas in the outcrop through the upper strata of the aquifer to discharge areas in nearby stream valleys. Regionally, water moves from outcrop recharge areas or central parts of the basin, into deeper parts of the aquifer and discharges in more remote stream valleys. Discharge to the surface also occurs by pumping from water wells. In areas sensitive to over-pumping of the aquifers, natural discharge may no longer occur.

Perennial streams that are cut into formations may be supplemented either directly or indirectly by groundwater discharge from the aquifer (ES&E, 1984). Where the aquifer intersects the ground surface, stream flow is directly supplemented by springs and seeps that occur as natural discharge.

Beneath FAMC property, the top of the Denver Formation is at an elevation of 1,621.5 m, and the piezometric surface of the Denver aquifer is at approximately 1,585 m, indicating that any contaminants that may enter the alluvial aquifer have the potential to migrate into the Denver aquifer. The potentiometric surface has declined by approximately 23 m since 1958. The groundwater flow direction in the Denver aquifer, in the area of FAMC, is toward the north-northeast. The USGS maps depict the Arapahoe aquifer under artesian conditions below FAMC (ES&E, 1984). The top of the Arapahoe Formation is at an elevation of 1,414.3 m, while the potentiometric surface is at an elevation of 1,539 m. In the region below FAMC, the elevation of the Arapahoe aquifer potentiometric surface appears to have been constant since 1958, despite heavy pumping occurring to the east and west of the installation. The generalized flow direction of groundwater in the Arapahoe aquifer under FAMC has historically been to the north. However, local pumping may have substantially altered the direction of flow below FAMC. There is one deep well at FAMC completed in this aquifer. A noted reduced pumping capacity may have been caused by a local reduction in the potentiometric surface or by other unknown circumstances.

The Laramie-Fox Hills aquifer is also under artesian conditions below FAMC (ES&E, 1984). The top of the aquifer is at approximately 1,151 m. The potentiometric surface is at an elevation of approximately 1,554 m. The potentiometric surface of the aquifer has declined by about 30 m since 1958. Beneath FAMC, the estimated groundwater flow direction for this aquifer is to the northwest.

Artesian conditions existing in the Arapahoe and Laramie-Fox Hills aquifers cause groundwater to move upward into the overlying aquifers where hydraulic communication exists between aquifers.

4.4.3.2 Groundwater Wells

Currently one bedrock well (292.6 m bgs) exists at FAMC. This well is completed in the Arapahoe Formation and was originally an artesian well that produced approximately 246 liters per minute (L/m). As described earlier, this well is in poor condition.

Five groundwater monitoring wells were installed around the golf course in 1980 to assess the impact of spray irrigation on the golf course. These wells were formally closed in 1994.

Three groundwater monitoring wells are located immediately north of Lagoon 272. These wells were formally closed in March 1996 and, according to FAMC personnel, were used to evaluate the effectiveness of the liner in this lagoon.

Groundwater monitoring wells have also been installed in the area of former Building No. 230, Building No. 135, north of Building No. 821, and north of Building No. 823. All of these wells have been used to evaluate and/or monitor petroleum contamination in groundwater due to onsite and offsite USTs.

4.5 SENSITIVE ENVIRONMENTS

Sensitive environments include cultural resources, threatened and endangered species, wetlands, floodplains, habitats, and prime and unique farmland. A description of existing and potential biota (i.e., vegetation, wildlife, and aquatic life) at FAMC and the surrounding area is also included in this section. Descriptions of these resources are discussed below.

4.5.1 Cultural Resources

Cultural resources are prehistoric and historic sites, structures, districts, artifacts, or any other physical evidence of human activity considered important to a culture, subculture, or community for scientific, religious, traditional, or other reasons (36 CFR Part 60.4). FAMC is significant as a World Wars I and II military medical installation designed specifically for the treatment of TB and respiratory diseases. In August 1991, FAMC commissioned a Cultural Resources Study (Simmons, 1991) to comply with the requirements of the National Historical Preservation Act (NHPA) and AR 420-40, "Historical Preservation Department of the Army," when developing the long-range facilities plan to replace the aging medical care facilities. In accordance with these

requirements, the study was to identify all buildings, structures, sites, objects, and districts that met the criteria of the National Register of Historical Places (Simmons, 1991).

The study found that most of the historic buildings on the installation had been altered to some extent but most still retained historical integrity (FAMC, 1993). Three buildings at FAMC were considered to meet the National Register of Historical Places criteria for individual eligibility: Building No. 500, the main hospital building; Building No. 205, the Assembly Hall School; and Building No. 230, the Quartermaster Filling Station (Simmons, 1991). National Register criteria for evaluation developed by the National Park Service (36 CFR 60) were used to assess the eligibility of the buildings.

Building No. 500, the main hospital building, was considered eligible under Criterion A for its association with the expansion of military medical facilities prior to World War II and its representation of the twenty-year struggle to win permanent status for the installation. The building was constructed during the period 1938 to 1941. Building No. 500 was also eligible under Criterion C for its representation of the Modernistic Style, and its significance as a 1940s state-of-the-art hospital building as designed by local military medical personnel and the Quartermaster Corps (Simmons, 1991).

Building No. 205, the Assembly Hall School, was constructed in 1919 to serve the educational mission of FAMC. The building was eligible under Criterion A for its association with the educational philosophy integral to the treatment of tuberculosis at the installation. The building is also eligible under Criterion C for its embodiment of the earliest construction phase of the post (Simmons, 1991).

Building No. 230, the Quartermaster's Filling Station, was built in 1923 and remodeled in 1935. The building was eligible for the National Register under Criterion C for its representation of early gas station architecture (Simmons, 1991). This building was demolished in 1993 during remediation of leaking USTs.

The 1991 study also identified a district at FAMC that included 216 historical resources. The concentrated and cohesive group of historical resources was identified as a potentially eligible National Register district under Criterion A for its association with the development and expansion of military medical facilities attendant to World Wars I and II and for its association with the treatment of TB in Colorado (Simmons, 1991). The district was also eligible under Criterion C for its representation of a self-sufficient Army General Hospital with buildings designed for a variety of functions and for its representation of the architecture of an early twentieth-century tubercular hospital (Simmons, 1991).

An extensive pedestrian cultural resources inventory was conducted in 1991 on an 8.3-acre tract, in the southeast corner of FAMC, south of Building No. 817 (Simmons, 1991). The site had been proposed for the location of the new commissary for the installation. The survey indicated that the cultural resources within the study area were not considered eligible for the National Register of Historical Places (Simmons, 1991).

An archeological study will be performed under the National Environmental Policy Act (NEPA) for the BRAC closure.

4.5.2 Threatened and Endangered Species

Threatened and endangered species have not been observed on the installation. In a 27 December 1993 letter to FAMC, the United States Department of the Interior's Fish and Wildlife Service (USFWS) verified the lack of endangered species on the installation (TechLaw, Inc., 1994; FAMC, 1993).

4.5.3 Wetlands and Floodplains

There are no indications of wetlands at FAMC (TechLaw, Inc., 1994; ES&E, 1984). Less than one acre of undeveloped land in the northeast corner of the installation is within the 100-year floodplain of Tollgate Creek (FAMC, 1993). Wetlands and riparian areas may occur offsite in the Tollgate Creek or Sand Creek floodplains.

4.5.4 Habitats

Sensitive habitats normally include plant communities that display one or more of the following characteristics:

- Plant communities that are unusual in species composition or wildlife usage;
- Plant communities that have a very restricted or limited distribution; or
- Plant communities that provide important wildlife functional values, or critical seasonal usage during species migration, breeding, or crucial summer/winter periods.

No sensitive habitats have been identified at FAMC. However, sensitive habitats may occur along the riparian corridors of Tollgate Creek and Sand Creek.

4.5.5 Prime and Unique Farmlands

Prime Farmland is identified by the Soil Conservation Service (SCS) as nationally important land that has the best combination of physical and chemical characteristics for use as cropland, pastureland, rangeland, or forest land. Unique Farmland is nationally important land, other than Prime Farmland, that is used for the production of specific high-value food and fiber crops. Farmlands of Statewide Importance are categories of land, including Prime and Unique Farmlands of national importance, that are of statewide importance for the production of food, feed, fiber, forage, and oilseed crops (Soil Conservation Service, 1982).

FAMC has two soil mapping units, Weld Loam and Ascalon Sandy Loam, over a majority of the property that have been identified by the SCS as Farmlands of Statewide Importance (Soil Conservation Service, 1982). These soils can qualify as Prime Farmland if irrigated with an adequate supply of water. The open space on the

southern side of FAMC has been leased to a farmer since 1976 for dryland hay production. This area however, would not qualify as Prime Farmland because it is not irrigated, and it appears to meet the SCS prime farmland exclusion of "already in or committed to urban development" (7 CFR 657).

4.5.6 Existing and Potential Biota

The biota at FAMC is composed of common wildlife and plant species adapted to, and characteristic of, urban areas. Approximately 10 percent of FAMC is covered with deciduous and evergreen trees, and 40 to 70 percent is covered with grasses and forbs (TechLaw, Inc., 1994). The dominant trees are elm (*Ulmus* spp.), hackberry (*Celtis occidentalis*), maple (*Acer* spp.), spruce (*Picea* spp.), some varieties of red cedar (*Juniperus* spp.) and white pine (*Pinus* spp.). Trees are predominantly located in the following four areas: the southwest corner at Peoria and Colfax; scattered at the periphery of the property line; the periphery of the golf course fairways; and lined along the existing access and collector roads throughout the installation (TechLaw, 1994). Understory plants include juniper (*Juniperus* spp.) and privet (*Ligustrum amurense*). The grasses and forbs include blue grama (*Boutelous graccilis*), buffalo grass (*Buchloe dactyloides*), western wheatgrass (*Acropyron smithii*), aster (*Aster* spp.), and smooth goldenrod (*Solidago missouriensis*).

The most abundant types of wildlife at FAMC are urbanized bird species and rodents. Typical urban bird species include American robin (*Turdus migratorius*), house sparrows (*Passer domesticus*), and house finches (*Carpodacus mexicanus*). Ducks (*Anas* spp.) and Canada geese (*Branta canadensis*) use the pond located at the General's Park in the southwest area of FAMC and the golf course. Mammals that may occur at FAMC include bats (*Eptesicus* spp., *Myotis* spp.), prairie dogs (*Cynomys* spp.), ground squirrels (*Spermophilus* spp.), gophers (*Thomomys* spp.), mice (*Mus* spp.), and rats (*Rattus* spp.). Many animals inhabit the general area around FAMC. Personnel at FAMC have reported seeing red fox (*Vulpes vulpes*), deer (*Odocoileus* spp.), and skunk (*Mephitis mephitis*) in the area northeast of the installation near Tollgate Creek (TechLaw, Inc., 1994).

The surface water that occurs at FAMC includes water hazards at the golf course and the General's Park Pond, located in the southwestern corner of FAMC. The USFWS stocks General's Park Pond once a year with trout (TechLaw, Inc., 1994). Other aquatic life at FAMC (such as amphibians and insects) is not significant. Aquatic life in Tollgate Creek and Sand Creek could include daphnids (*Daphia magna*), fathead minnows (*Pimephales promelas*), carp (*Cyprinus carpio*), longnose suckers (*Catostomus catostomus*), yellow perch (*Perca flavescens*), walleye (*Stizostedion vitreum*), crayfish (*Orconectes* spp.), amphibian tadpoles, and macroinvertebrates.

4.6 POTENTIAL HUMAN AND ECOLOGICAL RECEPTORS

A preliminary discussion of potential contaminant migration pathways, and current and potential human and environmental receptors that could be susceptible to exposure from migrating contaminants (at FAMC) is broadly addressed in this section (note that Section 5 describes the contaminants' possible hazardous waste sources at FAMC).

The purpose of this section is to assist in setting the stage for identifying environmental data gaps by addressing potential current and future exposure pathways (i.e., discussing contaminant sources [see Section 5], migration pathways, points of exposure, and receptors). This initial conceptualization of potentially completed exposure pathways can be used to assist with the prioritization of future investigations to ensure protection of human health and the environment.

Given the myriad past and present activities at FAMC and adjacent properties, and the possible future land uses (residential, commercial/light industrial, recreational, vacant/open space, and municipal), there may be several human and ecological exposure pathways to consider as various parcels of FAMC property are identified as requiring further evaluation via the BRAC process. This human and ecological receptor summary broadly identifies potential current and future receptors (human and ecological) that could exist under various exposure scenarios. This discussion provides a foundation for the development of future conceptual site models, which will provide a more detailed assessment of exposure pathways for contaminants in air, soils, groundwater, and biota. Additional information regarding the role of conceptual site models is provided in the BRAC Cleanup Plan Guidance (DoD, 1995).

4.6.1 Migration Pathway Summary

Routes taken by contaminants from source areas (such as landfills or other possible hazardous release sites) are defined as migration pathways. Air, soil, surface water, sediment, biota, and groundwater can act as secondary sources of, or transport media for, contaminants. Exposure pathways inclusive of these potential contaminant migration pathways will be considered, as appropriate, in future plans and investigations. However, based on the current level of environmental data and historical information for FAMC, exposure pathways containing and/or addressing each of the aforementioned media as contaminant transport mechanisms cannot be more specifically identified at this time. The following sections present an initial grouping of human and ecological receptors anticipated to exist or potentially exist at and around FAMC.

4.6.2 Potential Current and Future Human Receptors

Current land use at FAMC includes residential, recreational, commercial/light industrial, maintenance, agricultural, clinical health care, and administration-related activities. Potential current and future human receptors include residents (adult and child), recreators, children in preschool/day care facilities, office workers, construction workers, and maintenance workers as onsite receptors.

Current land use in the vicinity of FAMC includes commercial, light industrial, educational, residential, and recreational activities (see Section 5). For off-post locations, current and future human receptors include, but are not limited to, school children, residents (adult and child), recreators, children in preschool/day care facilities, office workers, construction workers, the homeless, and maintenance workers as potential offsite receptors.

Future land use specific to various property at FAMC is difficult to predict at this time. A reasonable assumption is that the potential on- and offsite receptors under current land use scenarios should be considered applicable under future land use scenarios.

4.6.3 Potential Current and Future Ecological Receptors

Evaluating representative ecological receptor species provides a practical alternative to evaluating all of the several hundred species that may be present at or near FAMC. Categories of potential receptors include vegetation, wildlife, and aquatic life. Representative ecological receptors potentially occur at FAMC and the surrounding area under current and future land use scenarios.

The ecological receptors selected may potentially be exposed to site-related contaminants. Representative vegetation receptors may include upland grasses and wetland plants exposed to contaminated soils and sediments. Representative wildlife receptors may include upland species at different trophic levels (e.g., mice, birds, and foxes), as well as waterfowl (e.g., ducks and geese), exposed to contaminated soil, sediment, and surface water. Sediment-dwelling aquatic invertebrates (e.g., crayfish and daphnids) and fish (e.g., minnows), that inhabit the ponds and nearby creeks could be used as representative aquatic life receptors exposed to contaminated sediment and surface water.

Current and future receptors, both human and ecological, may potentially be exposed to site-related contaminants at FAMC. All potential exposure pathways to these receptors that may reasonably be expected to occur will be evaluated under future investigations (e.g., CERCLA and otherwise).

SECTION 5

RESEARCH FINDINGS

Information gathered from review of sources identified in Section 2, which included FAMC environmental documents, regulatory and FAMC records, electronic environmental records search, interviews and visual inspections, aerial photograph analysis, and review of title documents, is summarized below. The information is presented for both CERCLA (hazardous substances and petroleum products) and non-CERCLA environmental-related issues (asbestos, lead-based paint, radon, and radionuclides).

The information was gathered in accordance with CERFA and was utilized in determining property categorization and ultimately subdividing parcels with similar environmental conditions, as presented in Section 6 and Appendix A, the CERFA Letter Report.

5.1 FAMC ENVIRONMENTAL DOCUMENTS

FAMC environmental documents presented in Section 2 were reviewed with respect to locations of storage, release, or disposal of hazardous substances or petroleum products, ongoing response actions, and identification of hazardous or petroleum waste sources. The text in italics presents conditions as they exist today. A summary of the information deemed relevant to this EBS is presented below.

5.1.1 Hazardous Substance Storage Locations

In addition to buildings storing hazardous materials in 1994 as presented in Appendix C, buildings that historically stored hazardous materials include the following:

- Building No. 19 was the chlorinator house used in support of the water distribution system (ES&E, 1984);
- Building No. 607 was a flammable liquid storage facility (Higginbotham & Assoc., 1977);
- Building Nos. 139, 207, 245, 246, and 327 were formerly used for storage of pesticides (TechLaw, 1994); and
- Building No. 167 (or the Golf House) was used prior to 1982, for the storage of pesticides/herbicides for the golf course (Higginbotham & Assoc., 1977).

Records searched did not indicate any past problems from pesticide spills or storage or mixing activities at FAMC (ES&E, 1984). *As noted, pesticide problems do exist at FAMC, as presented in Section 5.2.*

During an audit by the USACHPPM (formerly USAEHA), it was found that dikes/berms for aboveground storage tanks (ASTs) were not adequate at Building No. 152 (dirt berm), and no secondary containment was present for tanks at Building Nos. 143, 215, 128, 265, 500, 153, or 821 (USAEHA, 1993). *As noted, the tanks formerly located at Building Nos. 152, 153, 265, 500, and 821 have been removed; remediation associated with tanks from Building No. 215 is included under an existing construction contract. The ASTs at Building Nos. 143 and 128 will be relocated upon completion of construction of the CEP.*

5.1.2 Hazardous, Nonhazardous, and Radioactive Waste Sites

Hazardous, nonhazardous, and radioactive wastes were disposed through various methods at FAMC including: landfills, incinerators, sanitary and stormwater sewer systems, and gaseous emissions. Information concerning these types of disposal practices, as well as general information regarding historical waste management practices at FAMC, is presented below. In addition, information is presented regarding the groundwater monitoring wells at FAMC.

5.1.2.1 Closed Landfills

Five landfills were identified that were operated and closed at FAMC prior to the promulgation of RCRA (TechLaw, 1994). Landfill 1 is located west of the WWTP and was used prior to approximately 1962. This was a trench and fill-type landfill in which refuse was placed in trenches excavated by backhoes and then covered with excavated soil. This site presumably was the repository for municipal solid waste, other than ash, that was generated at FAMC during the landfill's period of operation (TechLaw, 1994).

Landfill 2 is located east of the WWTP and was a continuation of the disposal operations after the closure of Landfill 1. It began operation in approximately 1962 when Landfill 1 reached its maximum disposal capacity. In addition to standard municipal solid waste, pesticides, laboratory chemicals, and 55-gallon drums of oil were reportedly placed in Landfill 2. Waste disposal at Landfill 2 reportedly ceased in 1976 (TechLaw, 1994). The water table is relatively high beneath some areas of the fill in Landfill 2, and within 3 to 4 feet of the bottom of the 15-feet-deep trenches. For this reason, the decision was made to discontinue this landfill operation. In 1976, the landfill was covered with 2 feet of compacted soil, graded to encourage runoff, and seeded to prevent erosion.

Landfill 3 is located on the northeastern portion of FAMC and was in operation from approximately 1957 until 1971. Construction rubble was placed above grade and covered with a layer of soil (TechLaw, 1994).

Landfill 4 is located on the southeastern portion of FAMC, and was used for disposal of ash generated by the nearby incinerator. Landfilling operations at this site were conducted from 1918 until approximately 1950 (TechLaw, 1994).

Landfill 5 is located east of Building No. 642, and was used for burial of low-level radioactive waste in 1962. The waste consisted of biological materials primarily contaminated with short-half-life radionuclides. Total radioactivity present at the time of burial was 8.291 milliCuries (mCi) (TechLaw, 1994).

Geologic boring and trenching were performed for construction of the CEP and Facilities Engineering Compound on the southern side of Landfill 1 in the Spring of 1993. Review of trenching logs maintained by the USACE indicates that waste was encountered from 1 foot to 3 feet bgs, and ranged in depth from 2 feet to the reach of the backhoe (12 feet). The waste was identified adjacent to and surrounding Building No. 288, which is currently under construction. The waste encountered included bottles, metal cans, bowls, vials, plastic, paper, and a newspaper dated 15 November 1959. A gray "sludge" was encountered in one trench located immediately west of Building No. 288. None of the remaining trenches installed for the construction of the CEP and the Facilities Engineering Compound revealed the presence of waste materials. Heavy equipment (drag lines, scrapers) were used to dig pits up to 20 feet deep in those locations where waste was excavated during trenching operations (Hodgson, 1993). FAMC personnel indicated that these excavated wastes were disposed of offsite at an approved landfill.

5.1.2.2 Incinerators

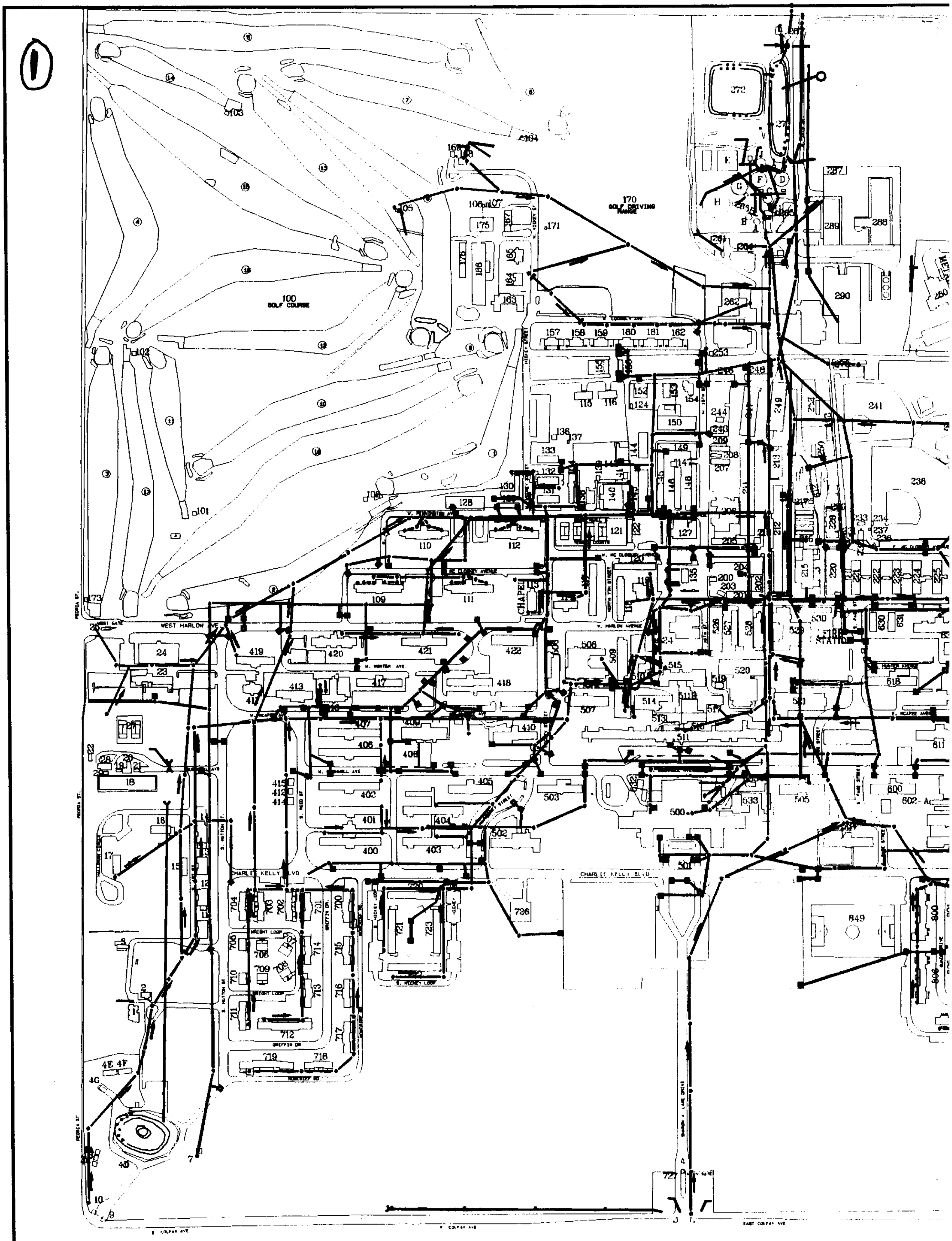
Wastes have historically been disposed of by incineration at FAMC. Table 5.1 summarizes the starting and ending years of operation for each incinerator. A total of six incinerators have been identified at FAMC as operating in the past (ES&E, 1984). *As noted, none of the incinerators is currently operating.*

Table 5.1
Incinerators at FAMC

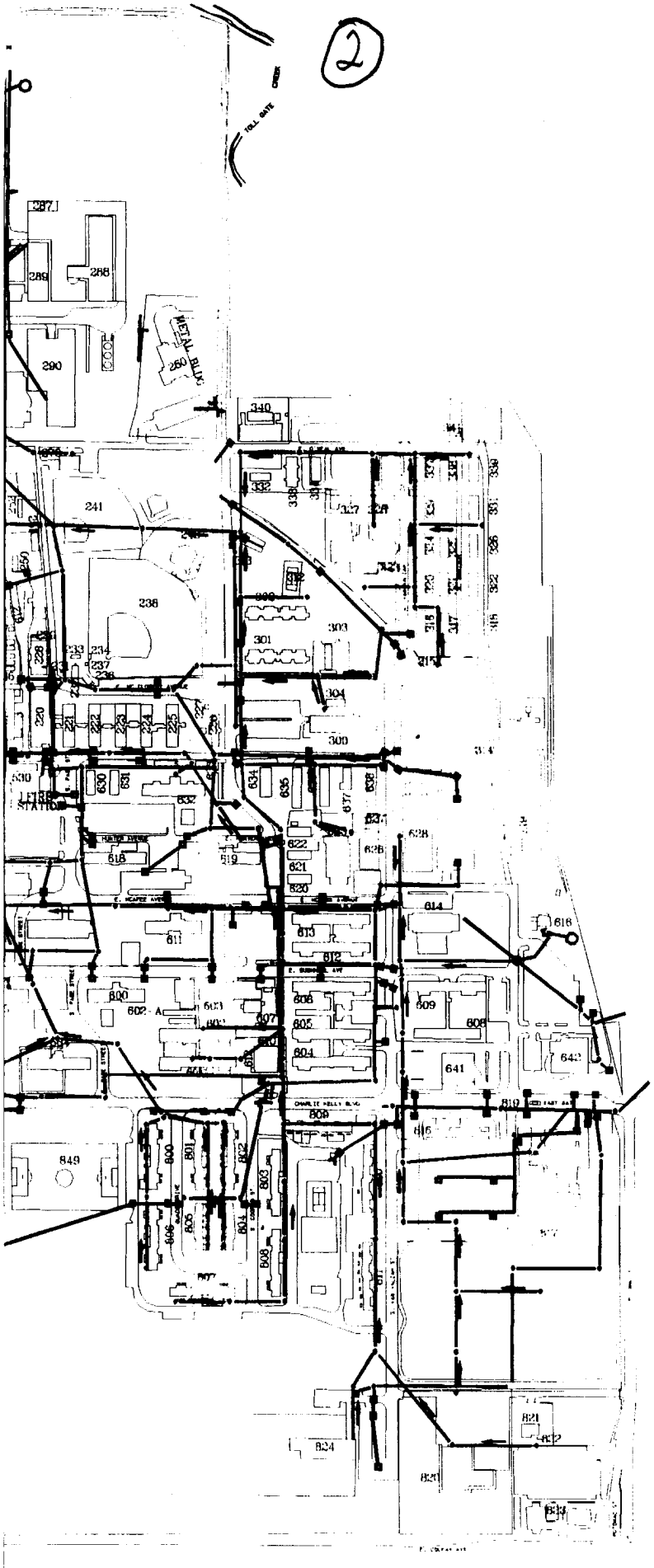
Incinerator No.	Building No.	Initial Year of Operation	Ending Year of Operation	Type of Incinerator
1	211/212	1918	1935	waste
3	264	1961	1975	waste
4	265	1977	1982	pathological
5	500	1941	1977	pathological
2	616	1935	1960	waste
6	625	unknown	unknown	unknown

5.1.2.3 Sanitary and Stormwater Sewer Systems

A system of gravity and force sanitary sewer mains delivers sanitary sewage to an onsite sanitary WWTP owned and operated by FAMC. A map of the system is presented on Figure 5.1. The WWTP has a nominal capacity of 1 million gallons per



100
GOLF COURSE
170
GOLF DRIVING RANGE
WEST HARLOW AVE
W. HARLOW AVENUE
W. HUNTER AVE.
CHARLIE KELLY BLVD
CHAPEL
FIRE STATION
WRIGHT LOOP
GRIFFIN DR
MUNCRIEF RD
S. HICKEY LOOP
S. HUTTON ST
S. REED ST
PEORIA ST
E. COLFAX AVE
EAST COLFAX AVE
E. MCAFEE AVE
272
287
288
289
290
241
236
849
727



Legend

Storm Drainage

Sanitary Sewers

N

100 0 100 200 300

SCALE IN METERS

REVISION	DATE	DESCRIPTION

ENVIRONMENTAL BASELINE
FITZSIMONS ARMY MEDICAL

SOURCE: Fitzsimons Army Medical Center

SEWER LOCATIONS

Projection: UTM - NAD27

(3)

Legend

Storm Drainage

Sanitary Sewers

100 0 100 200 300 400

SCALE IN METERS

REVISION	DATE	DESCRIPTION	BY

ENVIRONMENTAL BASELINE SURVEY
FITZSIMONS ARMY MEDICAL CENTER

SOURCE: Fitzsimons Army Medical Center

SEWER LOCATIONS AT FAMC

Projection: UTM - NAD27

Figure 5.1

day, and was constructed in the 1940s. The system consists of three force mains and pumping stations. One force main and pumping station each serve Building Nos. 616, 817, and 266 (a recreation building destroyed by fire) (FAMC, 1985b). A lift station is under construction at the CEP and Facilities Engineering Compound, which will include a submersible pump station with two submersible pumps.

Other sanitary waste disposal facilities at FAMC include septic tanks, leaching fields, and the spray irrigation of combined domestic effluent and stormwater onto the golf course. Building Nos. 168, 261, and 105 are served by septic tanks. Toilet facilities were added to the basement of Building No. 1; a cesspool is used to dispose of these wastes (FAMC, 1985b). *As noted, a septic system does not exist at Building No. 261, and the septic system at Building No. 168 has been out of service and is currently boarded up.*

Areas of the WWTP that were constructed on a very flat grade, providing insufficient slopes for this gravity system, result in periodic backup of sewage onto the ground from internal piping. To date, subsequent flushing of the internal piping has temporarily alleviated the problem. Also, several sections of the older tile sanitary sewer have broken, which periodically has caused backup problems (FAMC, 1985b).

Industrial wastewater generated from FAMC shops and activities is discharged to the sanitary sewer system and WWTP. Industrial wastewater is generated mainly by vehicle wash racks, boiler blowdown, wash water from paint booths, laundry facilities, and the Optical Fabrication Laboratory.

Medical wastes are steam-sterilized at Building No. 264; the pathological wastes are ground into small particles, and disposed of in the sanitary sewer system. Prior to 1982, these wastes were incinerated at medical waste incinerators located in Building Nos. 265 and 500. Estimated quantities of chemical effluent historically discharged by the Department of Pathology Laboratories to the sanitary sewer are presented in Table 5.2 (ES&E, 1984).

Table 5.2
Estimated Quantities of Effluent Historically Discharged by Department of Pathology Laboratories

Laboratory	Location	Chemical	Quantity
Special Chemistry	Building No. 602	Alcohol	200 ml/month
		Hexane	200 ml/month
Anatomical Pathology	Building No. 500	Formaldehyde	10 gal/month
Histology	Building No. 500	Xylenes	5 gal/week
		Alcohol	10 gal/week

As noted, the laboratories at FAMC are not currently discharging to the WWTP.

In addition to domestic sewage, the following areas discharged to the WWTP in 1985 (FAMC, 1985a):

- Optical Fabrication Laboratory: Building No. 628. Discharge from the Optical Fabrication Laboratory consists of polishing compound and grinding oil.

- X-ray and Photographic Developing Laboratory: Building No. 500. Small amounts of overflow of bath solutions and rinse waters from x-ray and photographic developing processes are discharged.

- Boiler Plant: Building No. 215. Currently, all boiler blowdown goes to the existing storm sewer system. A contract has been approved to redirect the blowdown to the sanitary sewer system.

- Mess Halls and Motor Pools. Sanitary sewer wastes from mess halls and motor pools have elevated concentrations of suspended solids, oil, and grease. Grease traps at these locations partially remove the contaminants prior to discharge to the WWTP.

- Automobile Garages, Shops, Motor Pools, and Gasoline Stations. Waste antifreeze from automotive facilities is discharged into the sanitary sewer system. *As noted, DPW has a calculation to support the fact that the antifreeze discharge to the system is not a problem for the WWTP.*

The WWTP currently maintains a NPDES permit to discharge effluent to Tollgate Creek. Violations of WWTP discharge permit standards were experienced in 1980 and 1981, primarily for pH and residual chlorine. In 1983, the required monitoring frequency of system effluent was increased by the EPA because of violations. During winter months, a minimal degree of stream degradation is experienced in Tollgate Creek. Tollgate Creek above and below the FAMC sewage effluent demonstrates good water quality from a biological standpoint. During the summer, effluent from both the WWTP and the stormwater sewer system is used as irrigation water for the golf course. During these periods, it is anticipated that elevated levels of certain pollutants will occur in the underlying groundwater aquifer. Although no specific analyses were undertaken, it is anticipated that this degradation of groundwater quality is minimal (FAMC, 1985b).

An audit conducted by the USACHPPM (formerly USAEHA) documented that in August 1992, an elevated coliform count was observed at the outfall of the WWTP. This finding was reported to the EPA. It was suspected that the bottom sediment in the storage lagoon was disturbed when trees were cut from the lagoon banks (USAEHA, 1993).

Digested sludge from the WWTP is composted to form an organic compost for non-food-chain plants on the installation. The composted sludge is not used on any vegetable beds. Digested sludge is placed in drying beds and tested before it is composted and spread on non-food-chain plants. In accordance with their NPDES permit, sludge is monitored semi-annually for total solids, volatile solids, arsenic, cadmium, chromium, copper, lead, mercury, molybdenum, nickel, selenium, and zinc. A one-time priority pollutant scan, including pollutants listed in 40 CFR 122, Appendix D, was submitted in 1994. In addition, monthly reports of oxygen uptake rate or volatile acids, influent and effluent fecal coliform and salmonella, and average

minimum and maximum digester operating temperature, pH, and digester detention time are recorded. Mercury and lead were detected once in the sludge. As a result, purchase of mercury thermometers was discontinued at FAMC, and filters were installed at the Optical Fabrication Laboratory to prevent lead from entering the sanitary sewer system (TechLaw, 1994).

In 1988, samples of sludge were taken from eight locations in Lagoon 271 and submitted for analysis selected on the basis of Colorado Domestic Sewage Sludge Regulations and the hazardous waste regulations of RCRA. Results of analyses regarding RCRA characteristics indicate that the sludge is non-hazardous with respect to the federal RCRA regulations. However, levels of reactive sulfide were found which may prevent compliance with the state program of RCRA enforcement. While there are no reactive sulfide limits in either the federal or state regulations, each agency has adopted its own guidelines for determination of hazardous levels with regard to reactive sulfide. The average of three samples analyzed for reactive sulfide was 268 mg/kg, which is below the EPA guideline of 500 mg/kg but above the state's guideline of 200 mg/kg. During sludge sampling, sludge depth was estimated at the eight sampling locations in the lagoon. Sludge depth ranged from 0.8 feet to 2.2 feet with an average depth of 1.4 feet. Based on these measurements, the lagoon is estimated to contain about 2,000 cubic yards of sludge with a solids content averaging about 43 percent by weight.

Hand-augered samples of soils beneath the lagoon were compared to lithologic information from previous borings in the vicinity of the lagoon. This information does not indicate that the lagoon was emplaced with an intentional lining. However, the natural material underlying the lagoon is a clayey sand, which should significantly impede the vertical movement of water from the lagoon. In 1988, no regulations required liners under domestic wastewater lagoons (IT, 1988).

A separate system of storm sewers collects surface runoff from roads and grounds, and directs it to Tollgate Creek. The first increment of the present storm sewer system was constructed in 1940 to serve the main hospital. Brick manholes were used in its construction. Major additions were made in the 1950s (Higginbotham & Assoc., 1977). Building Nos. 128, 135, 143, 270, and the 200-series buildings are connected to the stormwater sewer systems. These buildings are used for vehicle maintenance and equipment repair (TechLaw, 1994).

As noted, the sanitary and storm sewer systems at FAMC are old in some locations, and have received hazardous materials discharge for decades. Interviews with FAMC personnel have indicated that piping systems under every building older than 50 years at FAMC have had problems in the past.

5.1.2.4 Gaseous Emissions Sources

Two air quality permits have been issued to FAMC by the State of Colorado: Operating Permit No. C-12, 243 for the paint spray booth located in Building No. 209, and Operating Permit No. C-11, 788-1 for the hot water boiler located at Building Nos. 820 and 821, the USAR center. All other emission sources at FAMC are exempt from

permit requirements due to their small quantity or type of emissions. Permit requirements are in compliance at FAMC, and no problems are associated with air emission sources (ES&E, 1984).

The clinical laboratories at FAMC are equipped with Class 3-type ventilation hoods. The filters in the hoods are changed twice a year by a contractor who also arranges for proper disposal of the filters. Six fume ventilation hoods are used at FAMC research laboratories in Building No. 602. The following substances have been vented from each hood (TechLaw, 1994):

Hood 1: hexane, ethyl ether
Hood 2: Freon R-22
Hood 3: carbon disulfide
Hood 4: perchloric acid
Hood 5: cyanide
Hood 6: K-nitrogen

Each hood is attached to its own ventilation stack, and none of the hoods is equipped with a pollution control device. The nitrogen digester used with Hood 6 has a scrubber for sulfur dioxide. *As noted, hoods are also located in Building Nos. 600, 601, and 500. All biological hoods at FAMC have high-efficiency particulate air (HEPA) filters and the others are solely tested for air flow.*

5.1.2.5 Waste Management Practices

The DPW arranges for hazardous wastes to be picked up from various FAMC buildings. In many buildings, hazardous wastes are collected in individual laboratories in 5-gallon drums. The waste generator labels the waste containers and notifies DPW when a container is ready to be picked up. The waste is transferred to Building No. 261, the central waste accumulation area at FAMC, by an individual trained in hazardous waste transport. A designated Department of Logistics (DOL) vehicle is used for all transfers. Manifests are kept by DPW for hazardous wastes removed by contract from Building No. 261 (TechLaw, 1994). Prior to 1992, when individual containers became full, they were emptied into a 55-gallon drum (stored in Building No. 607) appropriate for the waste being disposed. These drums were then sent to the Rocky Mountain Arsenal (RMA) for disposal. In 1984, a contractor was designated for the disposal of hazardous solvents and chemicals generated by Clinical Investigation, Building Nos. 502, 600, 601, 602, and 610. Photographic/x-ray wastes are processed for silver recovery, and the recovered silver is turned in to the Defense Property Disposal Office (ES&E, 1984). *As noted, photographic/x-ray wastes are not processed for silver recovery. The process was not efficient, and resulted in greater than 5 mg/L of silver being discharged to the WWTP. X-ray wastes and spent fixer are recycled through Southwest Radiographics. This waste is accumulated in the silver recovery room in Building No. 500. Film is returned to DOL for resale, and spent photographic fixer is turned in as hazardous waste.*

During an audit by the USACHPPM (formerly USAEHA), it was found that Building No. 616, which was formerly used for 90-day hazardous waste accumulation,

had not undergone formal closure in accordance with RCRA (USAEHA, 1993). *As noted, this building requires formal closure.*

5.1.2.6 Groundwater Wells

Fourteen groundwater wells are located at FAMC, including a deep well at Building No. 227 and five shallow monitoring wells on or near the golf course. *As noted, the groundwater monitoring wells adjacent to the golf course were formally closed in 1994; the deep well is in poor condition.* Five 15-centimeter (cm)-diameter monitoring wells were established around and on the golf course during August 1980 to determine the impact of spray irrigation on the underlying groundwater. The groundwater samples were analyzed from a drinking water-quality standpoint, but not targeted for specific environmental contaminants. Data from the five shallow monitoring wells at the golf course showed that groundwater in the shallow aquifer upgradient from the golf course was high in total dissolved solids (TDS), ammonia, nitrate, hardness, chlorine, sodium, calcium, magnesium, manganese, and selenium. Downgradient wells showed increases in TDS, organic nitrogen, alkalinity, manganese, arsenic, iron, and selenium. Water in the deep bedrock aquifers is generally of good chemical quality, meeting drinking water standards for public water supplies (ES&E, 1984). The other eight groundwater monitoring wells were installed in conjunction with leaking USTs, as described in Section 5.1.3.

5.1.3 Releases of Petroleum Product

Thirty-seven USTs and 17 ASTs are documented to have been or to be currently in use at FAMC. Eleven USTs previously storing petroleum products were removed from various locations at FAMC in 1991 under the Rapid Response Underground Storage Tank Closures project (IT, 1992). The USTs were associated with Building Nos. 20, 135, 219, 230, and 270. Most of the excavation sites did not exhibit signs of contamination above regulatory limits, and were backfilled without remediation. Soil samples from an excavation near Building No. 135 exhibited contaminant concentrations above regulatory limits. The sampling contractor reported that the levels remaining in the ground were above regulatory limits, but it was determined that they did not pose a threat to human health and the environment. USTs at the DOL Service Station, Building No. 230, were identified as the source of contamination that resulted in investigation and subsequent remedial action (IT, 1992).

Four USTs were removed at Building No. 230; approximately 3,000 tons of hydrocarbon-contaminated soil from the excavation were sent offsite for incineration in 1994. Sampling and analysis after the removal action indicated that no detectable levels of hydrocarbon contamination were present in the groundwater. Field gas chromatograph (GC) results indicated that soils with the highest concentrations of benzene, toluene, ethylbenzene, and xylenes (BTEX) and chlorinated hydrocarbons were located along the eastern edge of Building No. 230. A sanitary sewer pipeline runs down the center of North 14th Street in this vicinity. It is possible that residual hydrocarbons may be present along the sanitary sewer pipe bedding (IT, 1994).

Building No. 135, the AAFES Station has three USTs that are currently in use. These tanks and ancillary equipment were installed in 1966. On 7 July 1994, during an annual tightness test, the fill line to the regular unleaded tank was found to be leaking; however, the tank tested tight. The leak was located at the point of contact between the fill line and the top of the tank. The fill line was excavated and repaired, and approximately 10 cubic yards of contaminated soil were removed and disposed (IT, 1995). The groundwater plume of petroleum hydrocarbons had been partially delineated in the vicinity of the AAFES Station in August 1995, based on samples collected in February 1995. Four groundwater monitoring wells were installed near the AAFES Station, and several Geoprobe®, soil boring, and hydropunch locations were used to delineate the plume. Downgradient investigation was recommended to determine the extent of the plume. The driving contaminant was identified to be benzene. The concentration of petroleum hydrocarbons in the soil at AAFES, as measured by total petroleum hydrocarbons (TPH), was determined to be below the State of Colorado action levels at all sampling locations, with the exception of soil sample location HP-6, beneath the southern-most portion of the east pump island. A TPH concentration of 660 mg/kg was observed at this location; the State of Colorado action level for Remedial Action Category II (RAC II) soils is 250 mg/kg. Soil contamination at AAFES is primarily concentrated at or near the water table, at a depth of 20 to 35 feet bgs (IT, 1995).

According to FAMC personnel, the former AAFES Station was located immediately northwest of the current AAFES Station. Therefore, prior to delineation of the extent of contamination from the current AAFES Station, this area was investigated. Anomalies were detected below the parking lot immediately east of Building No. 122, the former location of the AAFES Station. Excavation in this area revealed the presence of three USTs that had been filled with sand. These USTs included two 10,000-gallon tanks and one 1,000-gallon tank. These tanks were removed and disposed of offsite by a licensed vendor. This site is currently under further investigation.

The 500-gallon fiberglass UST at Building No. 267, near the WWTP discharge, was removed in December 1994. No staining was observed in the excavation, and the two soil samples collected from the excavation revealed non-detectable BTEX concentrations from one sample, and BTEX concentrations below regulatory action levels in the other sample (Wassenaar, 1995a).

The 1,000-gallon fiberglass UST at Building No. 821, the Reserve Center, was removed in December 1994. Staining was observed in the fill, native soil, and backfill material during the removal. The four soil samples collected from the excavation exhibited concentrations of total extractable petroleum hydrocarbons (TEPH) above the CDPHE-suggested action levels (Wassenaar, 1995b). *According to FAMC personnel, this site is currently under investigation. FAMC personnel also indicated that the UST at Building No. 820 was removed and showed no signs of contamination.*

FAMC personnel indicate that the 12 heating oil tanks located at Building No. 216 will be removed, and the soil and groundwater will be investigated and remediated under an existing construction contract. These efforts have not been initiated to date. A UST was removed immediately north of Building No. 142 without formal closure,

according to FAMC personnel. Personnel also indicated that a UST was discovered at Building No. 227 of unknown size or content during removal of the water tower at FAMC.

Visual inspection revealed that there are nine locations at FAMC where ASTs are or were formerly in operation. Building No. 29 stores fuel oil for the backup generator at the water distribution pump station. Building No. 142 stores gasoline and diesel fuel for the DPW, and fuels for golf course maintenance are stored adjacent to Building No. 167. The Fire Station, Building No. 531, stores diesel fuel for a backup generator. ASTs are also used to store waste oil at Building No. 128, the tractor shop, Building No. 135, AAFES Service Station, and Building No. 270, Marty's Garage. ASTs were formerly located between Building Nos. 152 and 153 for storage of gasoline and diesel fuel for maintenance vehicles. Three ASTs are under construction at the CEP to store diesel fuel.

During an audit by the USACHPPM (formerly USAEHA), it was found that two fuel tanks located at Building No. 500 were removed in the late 1980s, but not properly closed in accordance with current regulatory requirements (USAEHA, 1993). *As noted, these tanks were closed in accordance with the regulations in effect in 1986, which did not require formal closure.*

5.1.3.1 Oil/Water Separators

Three oil/water separators, two located at Building No. 270 and one located at Building No. 128, are present at FAMC. The two located at Building No. 270 include one south of the building, which is the pressure washing drain, and one located north of the building, which collects oil and grease from inside the building. The one at Building No. 128 is located immediately southwest of the building. A contract was recently awarded to clean out the oil/water separators and sample the discharge on a regular basis.

5.1.4 Asbestos Sites

A partial asbestos survey was conducted by the U.S. Army Corps of Engineers (USACE) Omaha District from 1 May through 30 August 1992. The survey encompassed a total of 117 buildings and collection of 500 samples of suspected asbestos-containing materials (ACM). Results of the survey indicated that 102 of the 117 buildings surveyed contained ACM. FAMC has initiated an asbestos abatement program and has completed abatement on approximately 15 buildings and initiated abatement on many of the remaining buildings at the installation. Floor tile, floor tile adhesive, and linoleum in those remaining buildings still contain asbestos. The asbestos abatement program includes abatement of asbestos insulation in FAMC's steam distribution system; approximately 80 percent of the asbestos insulation in the steam distribution system has been abated (TechLaw, 1994).

5.1.5 Lead-Based Paint Sites

In response to the Army's Lead-Based Paint Policy Guidance dated 28 April 1993, FAMC prepared a draft Lead-Based Paint Abatement Management Plan. The plan

provided guidance and procedures for effectively managing lead-based paint hazards at FAMC, and established responsibilities for specific aspects of FAMC's lead-based paint management program (TechLaw, 1994). Lead-based paint sampling has been performed at limited locations, including Building No. 507 at FAMC.

5.1.6 Polychlorinated Biphenyls Storage Locations

PCB-containing transformers have been used and were in use at FAMC in 1984. Directorate of Facilities Engineering (DFAE) (currently DPW) conducted a survey of in-service transformers in 1978. At that time, 16 transformers were identified as containing PCBs and were labeled as such. Of the 16 transformers, 15 were located at Building No. 500 and one was located at Building No. 300. In August 1983, the 15 transformers located at Building No. 500 were removed and shipped offsite for disposal. Leak inspections have been conducted since 1981 by DFAE (currently DPW) on the transformer located west of Building No. 300, and several minor leaks have been reported. No environmental contamination was expected from these leaks because the volume spilled reportedly was less than 2 quarts, and the spills were cleaned up and disposed of immediately upon discovery (ES&E, 1984).

The salvage yard located near Building No. 251 and adjacent areas have historically been used to store scrap metal, scrap wood, drums of liquid and solid wastes, and transformers containing less than 50 parts per million (ppm) of PCBs. The materials in this area are not covered, nor do they have secondary containment (TechLaw, 1994).

As noted, PCB-containing transformers have been stored in the salvage yard. Transformers containing PCBs were removed from the electrical storage yard in 1995, and from the salvage yard in 1996. One small transformer from USAMEDS x-ray equipment and ballasts assumed to contain PCBs was stored in Building No. 261 prior to offsite disposal. Additional information concerning PCBs is presented in Section 5.2.7.

5.1.7 Radon Sites

A radon survey was conducted at FAMC in 1991. Results of long-term radon monitoring identified several structures with radon levels in the 8-to-20 picoCuries per liter (pCi/L) range. The EPA has established a goal of 4 pCi/L for radon reduction. Buildings of primary concern due to the level of radon and frequency of occupancy are as follows (TechLaw, 1994):

- Building No. 14, Senior Officer's Quarters, with a reading of 14.7 pCi/L; and
- Building No. 603, the Directorate of Information Management Message Room, with a level of 16.3 pCi/L.

Funding has been requested for radon mitigation in Building No. 603. The Senior Officer's Quarters have been abated by sealing cracks in the walls and floors of the basement and drilling holes in the foundation for cross-ventilation (TechLaw, 1994). Additional information on radon is presented in Section 5.2.7.

5.1.8 Radionuclide Sites

Radionuclide sources in operation since 1964 include a routine nuclear medicine clinic, *in vitro* diagnostic testing laboratory, and a clinical research installation involving radioisotopes. The isotopes and 28 brachytherapy cesium sources (951 millicuries at time of disposal) are authorized by an NRC license. The cesium-137 seeds were packed and transferred for disposal on 18 December 1995. In addition, a sealed cobalt-60 teletherapy source of approximately 20,222 curies is authorized. The sealed Cobalt-60 teletherapy source was 2.72E10+3 curies at the time of transfer on 20 January 1993. FAMC has the termination license on file for the cobalt-60 source. This license was terminated on 12 January 1994.

Three buildings have been designated for disposal of liquid radioactive waste within NRC limits. Three laboratory sinks are used to dispose of a variety of isotopes generated by the RIA Laboratory and the Radiopharmacy Laboratory at Building No. 511. The Department of Clinical Investigation used a laboratory sink in Building No. 600 to dispose of liquid waste. A fourth laboratory sink used for radionuclide disposal is located in Building No. 603. The liquid wastes are discharged into the sanitary sewer system in accordance with NRC regulations. Other radiological wastes are handled and disposed of by the Health Physics Office. Dead animals from the Animal Resources Building No. 610 are collected separately for disposal in a commercial radioactive landfill (ES&E, 1984). *As noted, solid low-level radioactive wastes are stored in the Radioactive Waste Laboratory in Building No. 603.*

5.1.9 Non-Contaminant Areas

Historical activities were documented through the review of aerial photographs, interviews with current and former employees, visual inspection, and review of FAMC and regulatory documentation. If these sources indicated that hazardous materials or petroleum products had never been stored, released, or disposed of in a building or area, these buildings or areas were considered non-contaminated. These areas included the vacant property located on the south side of FAMC, residential areas, recreational areas and buildings, and buildings historically used for administration, benign storage, or buildings conducting benign activities (e.g., day care). More information on the resources used for justification of non-contaminated areas is presented in Section 6.1.

5.2 REGULATORY AND FAMC RECORDS

Regulatory, FAMC, and offsite property records were identified and reviewed from the following sources: EPA, CDPHE, State of Colorado Oil Inspector's Office, Adams and Arapahoe County, Tri-County Health Department, City of Aurora, City of Aurora Fire Department, and FAMC. A discussion of regulatory records associated with each of these agencies is presented below.

5.2.1 U.S. Environmental Protection Agency Records

EPA records were reviewed pertaining to enforcement of RCRA, Clean Water Act (CWA), Toxic Substances Control Act (TSCA), and CERCLA. EPA has regulatory

authority for enforcement of these regulations. A summary of the records review is presented below.

A review of the RCRA records identified that hazardous waste had been stored in Building No. 327. A RCRA inspection by EPA on 16 June 1981 noted six 55-gallon drums, one of which was dented and unlabeled, and showed evidence of recent leakage. The floor of the storage room was warped in several locations and showed evidence of a spilled black oily substance. A full 5-gallon drum labeled 1,1,1-trichloro-2,2-bis-(p-chlorophenyl)ethane (DDT) 2 percent - 10 percent Lindane was also noted. The inspection indicated that approximately 300 gallons of DDT were stored in Building No. 327 (approximately 8 feet by 12 feet) from before 1961 until 1981. Records indicate that the DDT was shipped to the Rocky Mountain Arsenal on 11 November 1981. The contamination from leaking containers was reportedly limited to the upper layers of the flooring, and the floor was replaced with new linoleum around the time of the offsite shipment. The June 1981 inspection was the only EPA enforcement documentation found. By 1986, the Colorado Department of Health (now CDPHE) had taken over responsibility for enforcement of RCRA at FAMC.

Documentation concerning the enforcement of the CWA at FAMC was available for the years 1990 through 1995. Although a NPDES permit was issued to FAMC prior to 1990, the regulatory records had been archived and were not available for review. The EPA indicated that no additional information pertinent to the EBS would be found in the archived records (Cross, J., 1995). The majority of the regulatory documentation that was found pertained to mechanical problems at the WWTP and the timely submittal of discharge monitoring reports (DMRs). Several of the operational problems were recurrent, including "priming" problems with the sludge recirculation pumps, leakage around bases of the trickling filters, and excess amounts of oil and grease. No documentation was found that identified effluent contaminants that exceeded NPDES permit discharge limits.

FAMC maintains three discharge outfalls as follows:

Outfall Serial Number	Description of Discharge Points
001	Discharge from the east holding pond to Tollgate Creek
001A	Discharge from the west holding pond to the golf course via spray irrigation
002	Discharge from the swimming pool drain to Tollgate Creek

A review of TSCA records found PCB Annual Summary Reports from 1984 through 1988, but not for 1989 through 1995. One site-wide enforcement action was identified in 1990; associated corrective actions were completed and the case was closed. The salvage yard, located immediately west of the baseball fields, was identified as an area

where a PCB-contaminated transformer had been stored and may have potentially leaked onto the ground.

In a letter to FAMC from EPA dated 14 March 1983, the EPA warned FAMC regarding non-compliance with annual TSCA PCB disposal reports. The letter mentioned a PCB spill that occurred in a vault near Building No. 300. The contamination had been cleaned up and removed by FAMC in a 55-gallon drum.

A review of CERCLA emergency response notification records identified four calls to the notification system. Of the four telephone calls reported, two spills to the WWTP were identified. The first spill caused no discharge to Tollgate Creek and Sand Creek, but apparently the EPA was notified because of inadequate treatment of sewage. The second spill released 12,000 gallons of sewage into Sand Creek. The third spill was an unknown release onto FAMC property. The exact location of the spill onto FAMC was undocumented. The material released was possibly old landfill waste. The fourth spill reported resulted from alleged improper removal of asbestos from a burst steam pipe. The exact location of the steam pipe was not documented. No records pertaining to properties adjacent to FAMC were identified in EPA files.

5.2.2 Colorado Department of Public Health and Environment Records

CDPHE records were reviewed pertaining to enforcement of RCRA and the Clean Air Act (CAA). EPA currently has regulatory authority for enforcement of these regulations and has delegated authority for the RCRA program to CDPHE. A summary of the records review is presented below and has been organized as either FAMC or surrounding property.

5.2.2.1 Records for FAMC

Correspondence from FAMC to CDPHE dated 28 December 1982 indicated that FAMC evaporated xylene and toluene in quantities of less than 2 liters per day under the hospital laboratory hoods as a means of disposal. *As noted, this is no longer practiced at FAMC.*

A Potential Hazardous Waste Site Preliminary Assessment dated 16 May 1986 was a followup inspection to one performed on 16 June 1981 by the EPA for Building No. 327. No DDT was present at the time of the inspection on 16 May 1986. At that time, the CDPHE inspectors were informed of the onsite landfill, Landfill 2, that operated until 1975. No records are available to document activities at the landfill. The geologic conditions at the site were unknown at the time of the inspection, and groundwater impacts from the landfill could not be evaluated.

Site inspections of FAMC were performed by CDPHE on 8 July 1986 and 2 October 1986. Results of the inspections indicated that FAMC was improperly disposing of hazardous waste in a municipal waste dumpster adjacent to Building No. 628, the Optical Fabrication Laboratory. During the 8 July 1986 inspection, the inspectors sampled liquid waste from the dumpster. Analysis of the sample by CDPHE revealed the presence of methylene chloride (17.80 ppm), tetrachloroethylene (PCE) (2.06 ppm), and trichloroethylene (TCE) (0.15 ppm).

An inspection was performed by CDPHE on 14 August 1986. The CDPHE was informed by FAMC that a sodium hydroxide spill had occurred approximately three weeks earlier and a firm had been contracted to clean up the soil and liquid. The liquid was solidified and 33 drums were shipped offsite. The location of the spill was not documented in the records.

On 7 May 1987, FAMC was served with a compliance order regarding disposal of hazardous waste without a permit. The compliance order referenced the findings of the 8 July 1986 inspection. On 21 August 1987, the CDPHE served FAMC with a final compliance order to immediately cease the illegal disposal of hazardous waste in dumpsters.

On 1 September 1987, FAMC notified the CDPHE that operations involving the dip tank for stripping furniture in Building No. 212 had ceased. In addition, the CDPHE was notified that cytotoxic compounds had been generated by the pharmacy support area in Building No. 503.

5.2.2.2 Records for Property Surrounding FAMC

A review of CDPHE records revealed that the Silver State Cleaners located at 11505 East Colfax Avenue, approximately three-tenths of a mile west of FAMC, had documented releases of hazardous waste from its facility. A consent agreement dated 3 September 1991 between the CDPHE and Silver State Cleaners stated that since early 1989, Silver State Cleaners had been replacing their dry cleaning units. The old dry cleaning units were brought to the 11505 East Colfax facility and stored in the paved lot north of the building. It is suspected that residual PCE contained within the units leaked onto the paved area. In the process of excavating three USTs, four boreholes were completed and soil samples were collected on 8 and 9 March 1990. These four samples contained a measurable quantity of PCE. The soil sample collected from one borehole revealed a PCE concentration of 49,000 parts per billion (ppb) and a TCE concentration of 430 ppb. A soil gas survey was performed and the results were documented in a May 1991 report. This report indicated that the soil gas volatile organic compound (VOC) plumes were primarily confined to the north parking lot.

In a letter dated 7 January 1992, Silver State Cleaners defined the history of the site and what environmental projects had been completed to date. In 1966, diesel and Stoddard solvent tanks were installed, and in 1976, a gasoline tank was installed at the site. The Stoddard solvent tank was abandoned in 1985, and the diesel and gasoline tanks were abandoned in 1989. All of these tanks were removed on 19 December 1989. The Stoddard and diesel tanks showed signs of leakage. Soil samples indicated that a small amount of soil would need to be removed due to detection of a small amount of PCE. Groundwater monitoring revealed the presence of PCE at concentrations of 18, 25, and 35 ppb.

5.2.3 State of Colorado Oil Inspector's Office

Records at the State of Colorado Oil Inspector's Office were reviewed to identify the status of USTs that may be present at FAMC and adjacent property. The State of Colorado Oil Inspector's Office has regulatory authority for enforcement of these

regulations. A summary of the records review is presented below and has been organized as either FAMC or adjacent property.

5.2.3.1 Records for FAMC

No FAMC UST records were identified at the State of Colorado Oil Inspector's Office, with the exception of tank registrations. Investigation documents, notification of closure, and other documents could not be located by the Oil Inspector's Office.

5.2.3.2 Records for Property Adjacent to FAMC

Several records pertaining to properties adjacent to FAMC were identified. Records were identified regarding a gasoline station located at 12085 East Colfax Avenue on the northwestern corner of the Peoria Street and East Colfax intersection. This facility has petroleum contamination migrating from the gasoline station offsite toward FAMC. The most recent correspondence to the State of Colorado Oil Inspector's Office was a letter from the Exxon Company, who owned the site until Conoco purchased it in 1990, to CDPHE indicating that the groundwater beneath the site is continuing to be monitored and is being treated by air sparging and vapor extraction technologies. An old soil venting system was shut down and a new soil vapor extraction/air sparging system was installed in November 1993. Results of groundwater sampling that was performed in the first quarter of 1994 indicated that benzene concentrations of 104 ppb and 19.6 ppb were collected from wells approximately 50 to 60 feet west of the FAMC property boundary. Groundwater flow from this site is to the northeast toward FAMC. The report also indicated that the second quarter of 1994 would involve groundwater monitoring, water quality sampling, and checks on the soil vapor extraction system.

A spill occurred at the gasoline station located at 13690 East Colfax Avenue, on the southeastern corner of the East Colfax Avenue and Potomac Street intersection. In December 1987, 1,310 gallons of leaded gasoline and 564 gallons of premium unleaded gasoline were released when concrete form stakes were driven into the product lines by a contractor installing new fiberglass product lines. A series of temporary monitoring wells was installed on FAMC property in August 1988. Benzene was detected above regulatory limits in three of the wells. This information was used to develop a contour map of the extent of contamination in this area. A permanent groundwater monitoring well was installed at FAMC, immediately north of the Regional Transportation District (RTD) Park n' Ride fence, and sampled in July 1994. Results of the sampling indicated that groundwater from the well on FAMC property was in compliance with state groundwater standards for benzene, toluene, and ethylbenzene. The well located at FAMC is continuing to be monitored semi-annually for BTEX while the site is under remediation.

The gasoline station located at 12796 East Colfax Avenue has USTs registered with the State of Colorado Oil Inspector's Office, and no documented releases have been identified.

5.2.4 Adams and Arapahoe County Tax Assessor Records

5.2.4.1 Adams County

A review of Adams County Tax Assessor records revealed that numerous individuals, investment, and land companies previously owned the property surrounding FAMC. FAMC property is located in Section 36, Township 3 South, Range 67 West. The sections, townships, and ranges of the properties surrounding FAMC are presented in Figure 5.2. The 1922 records indicate that the northeastern portion of this section has been owned by individuals and investment companies since the 1920s.

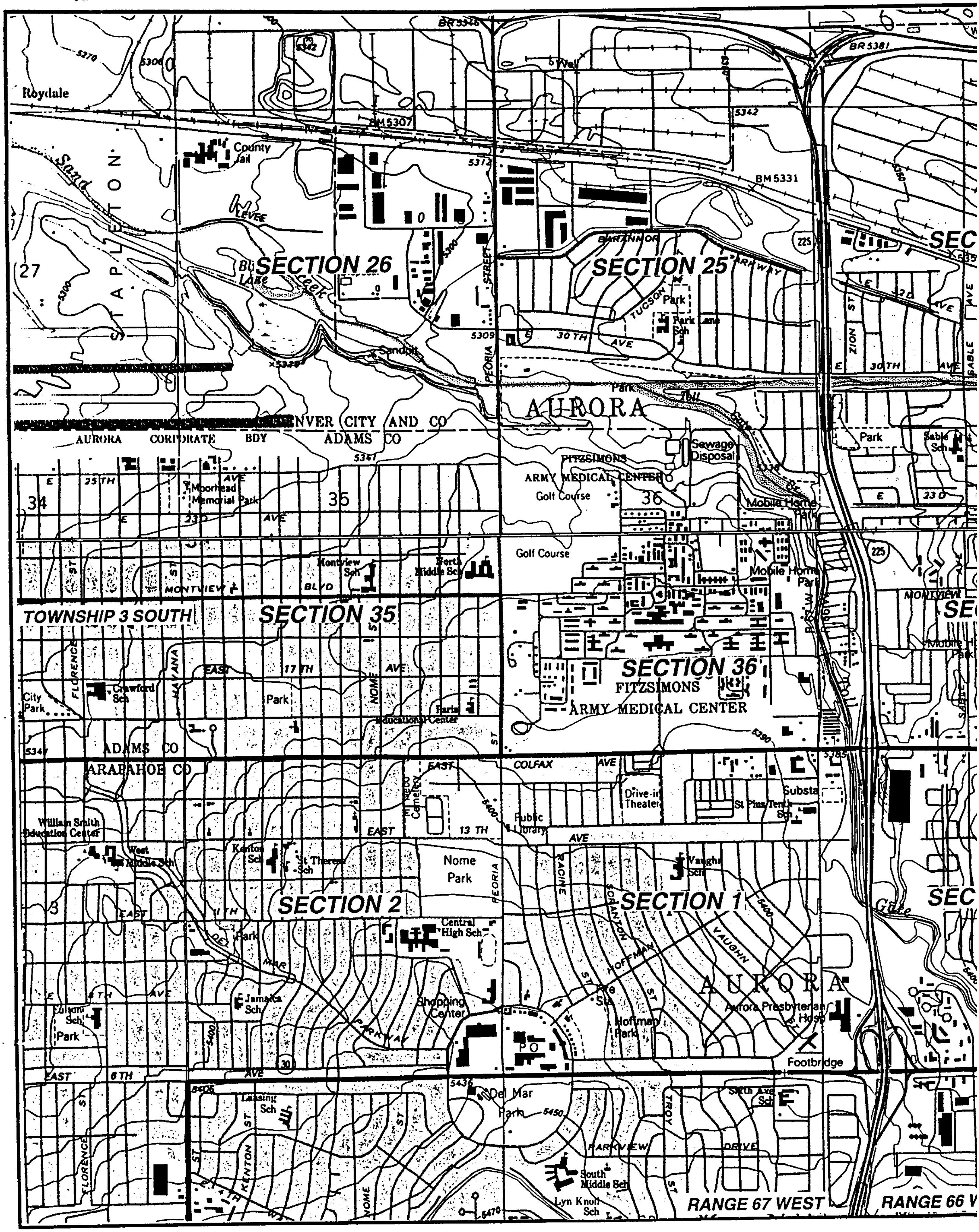
Section 31, Township 3 South, Range 66 West includes the property that borders FAMC on the east side. Review of the records indicates that Continental Oil Company owned the property in the southwest quarter of the southeast quarter of this section in 1958. Records from 1970 show that Continental Oil Company still owned the parcel and had made improvements on the property.

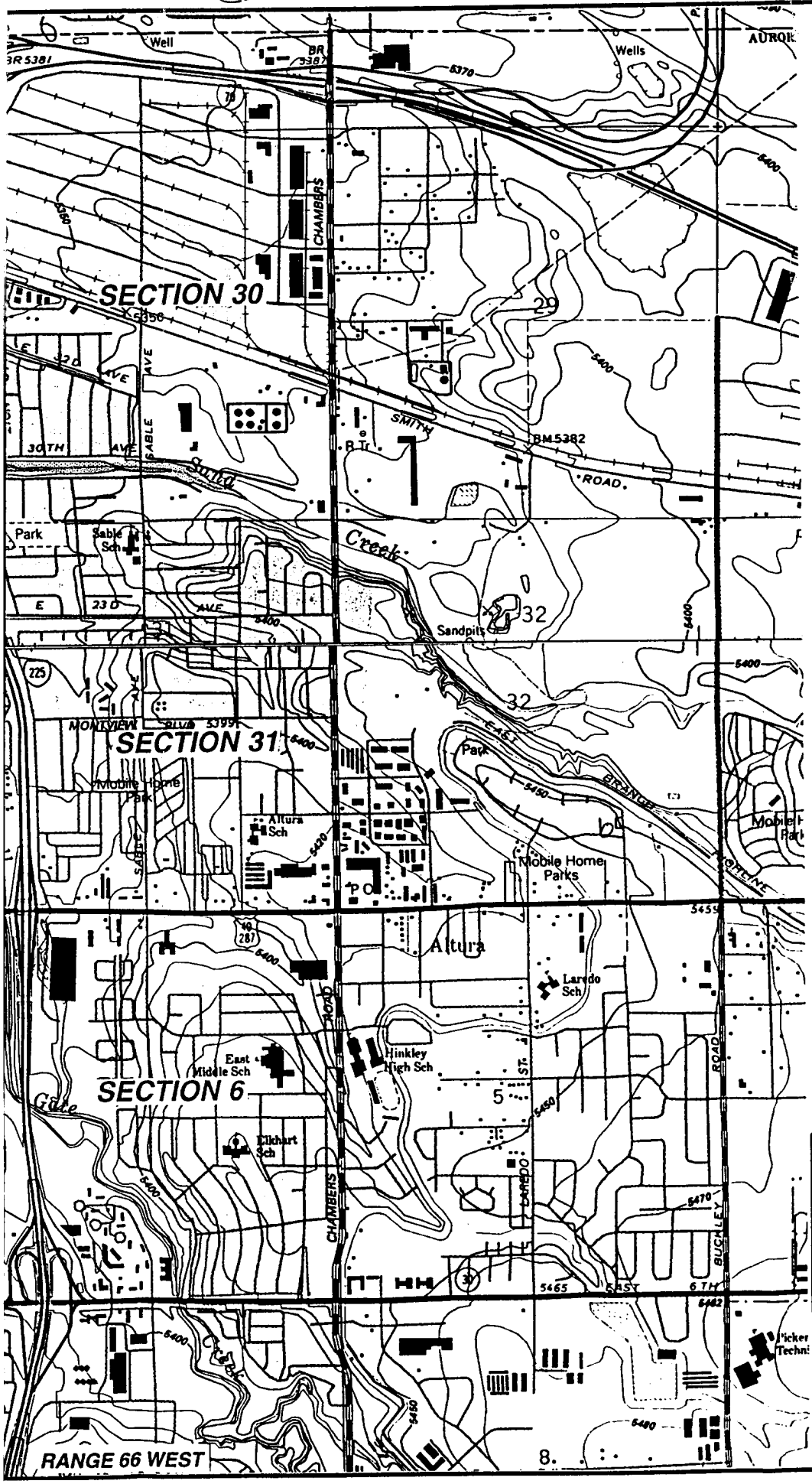
Section 35, Township 3 South, Range 67 West includes property to the west of FAMC. Records pertaining to this section indicate that Phillips Petroleum Company owned the southeast quarter of the southwest quarter of the southwest quarter of this section with improvements in 1952. Also in 1952, Carter Oil Company owned the southwest quarter of the southwest quarter of this section with improvements. Carter Oil Company also owned the west half of the west half of the southwest quarter of the southwest quarter of this section and no improvements were recorded.

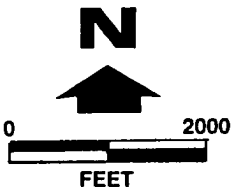
Section 25, Township 3 South, Range 67 West includes property that borders FAMC on the north side. Early records indicate that individuals and investment companies owned this section. The U.S. Government railroad right-of-way traversed this section in the 1930s, and the Great Western Sugar Company owned improvements to this right-of-way in the 1920s and 1930s. The Union Pacific Railroad Company annexed the land to the Denver Company in 1962.

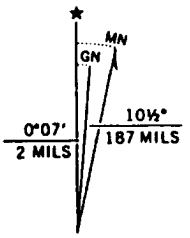
Ownership of several subdivisions in the immediate vicinity of FAMC was reviewed. The Boston Heights Subdivision is located immediately west of FAMC. The former location of Highline Canal was shown running parallel to Peoria Street and then running west at 23rd Avenue. In the 1970s, Exxon Corporation owned the parcel with improvements, shown as Humble Oil Company on the northwest corner of the Colfax Avenue and Peoria Street intersection. In 1973, the June Car Wash was located north of the Exxon gasoline station, along Peoria Street. Review of the Gutheil Gardens Subdivision indicated the presence of several gasoline service stations on the east side of FAMC. A Humble Oil Company gas station was located on Colfax Avenue at what appears to be the Potomac Street intersection in 1965. A Skelly Oil Company gas station was located on Colfax Avenue immediately east of Interstate 225 in 1965.

(i)


Roydale
County Jail
BM5307
BM5331
BR5346
BR5381
SECTION 26
SECTION 25
SECTION 35
SECTION 36
SECTION 2
SECTION 1
27
34
35
36
3
STAPLETON
Sand Creek
LEVEE
Bluff Lake
Sandpit
PEORIA STREET
30TH AVE
E 30TH AVE
Park Lane Sch
Park
AURORA
NVER CITY AND CO
AURORA CORPORATE BDY
ADAMS CO
FITZSIMONS ARMY MEDICAL CENTER
Golf Course
Sewage Disposal
Mobile Home Park
E 25TH AVE
E 23D AVE
Moorhead Memorial Park
MONTVIEW BLVD
Montview Sch
North Middle Sch
TOWNSHIP 3 SOUTH
EAST 17TH AVE
City Park
Crawford Sch
Paris Educational Center
ADAMS CO
ARAPAHOE CO
EAST COLFAX AVE
Mt Nebo Cemetery
Drive-in Theater
St Pius Tenth Sch
Substa
Public Library
EAST 13TH AVE
William Smith Education Center
West Middle Sch
Kenton Sch
St Therese Sch
Nome Park
Vaughn Sch
Central High Sch
DEL MAR PARKWAY
Jamaica Sch
Fulton Sch
Park
Shopping Center
PO
Hoffman Park
Aurora Presbyterian Hosp
Footbridge
EAST 6TH AVE
Lansing Sch
Del Mar Park
Sixth Ave Sch
PARKVIEW DRIVE
South Middle Sch
Lyn Knoll Sch
RANGE 67 WEST
RANGE 66 W
Toll Gate Cr







UTM GRID AND 1994 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

QUADRANGLE LOCATION

FIGURE 5.2

SECTIONS, TOWNSHIPS AND RANGES OF PROPERTIES SURROUNDING FAMC

Environmental Baseline Survey
Fitzsimons Army Medical Center
Aurora, Colorado

PARSONS ENGINEERING SCIENCE, IN
Denver, Colorado

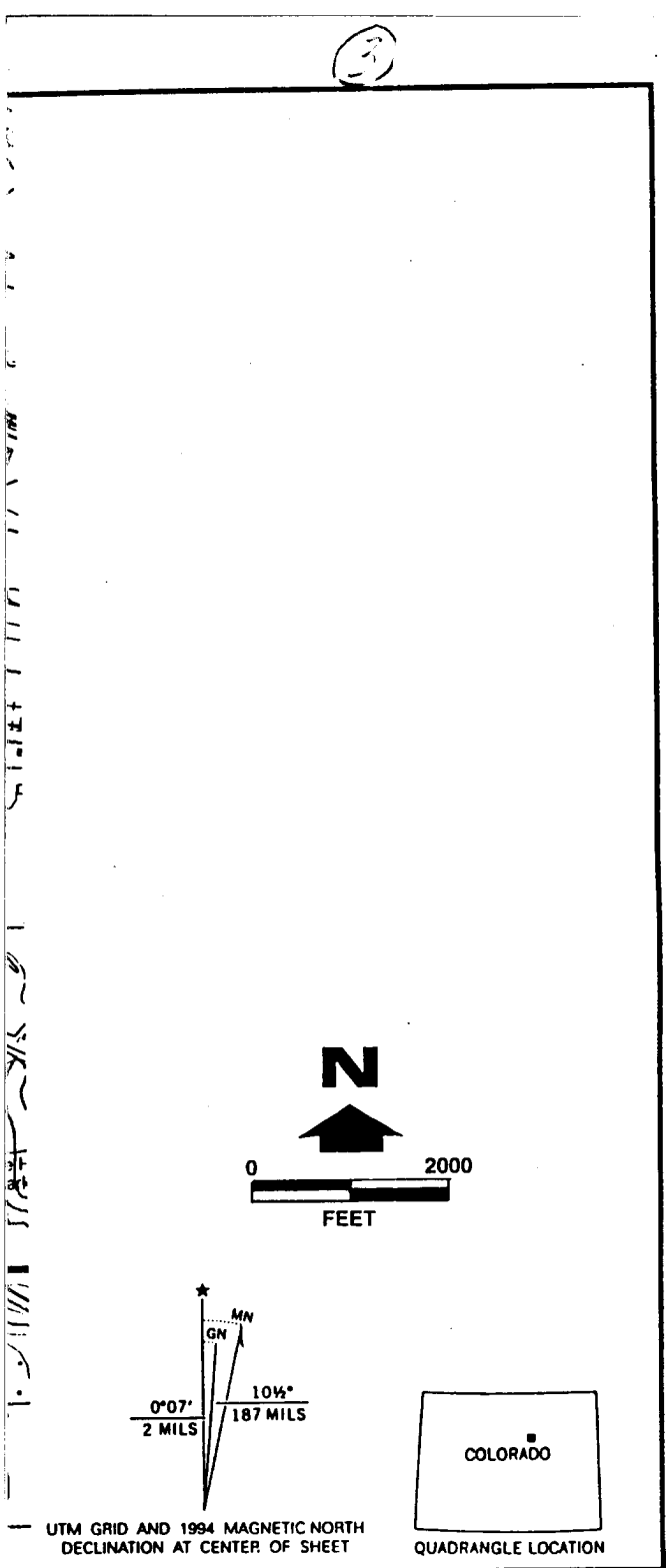


FIGURE 5.2

SECTIONS, TOWNSHIPS AND RANGES OF PROPERTIES SURROUNDING FAMC

Environmental Baseline Survey
Fitzsimons Army Medical Center
Aurora, Colorado

PARSONS ENGINEERING SCIENCE, INC.
Denver, Colorado

5.2.4.2 Arapahoe County

Review of Arapahoe County Tax Assessor records revealed that property immediately south of FAMC is located within Section 1, Township 4 South, Range 67 West. Numerous individuals, investment companies, and motels have historically owned this property. Review of the plat map of Section 1 indicated that several of the properties that border East Colfax Avenue on the south side are within the Lynnwood Heights Subdivision. The records indicated that Block 4, which is located on the southeast corner of the East Colfax Avenue and Potomac Street intersection, was owned by Gulf Oil Company in 1964. Block 3 of this section was owned by Holiday Inns of America in 1963, and was turned over to E&L Enterprises Inc. in 1967. Lot 7 was owned by Chisim-Scherling, Inc. in 1967. Blocks 1 and 2 were owned by Wolff Construction Co. in 1962. Section 1 records also indicate that the J.E. Rouff Subdivision was located on the south side of East Colfax Avenue, directly south of FAMC. According to these records, Lot 8 and the west 75 feet of Lot 9 were owned by the Pep Feed and Seed Company in 1959. Lot 19, the east 90 feet of Lot 18, and the west 50 feet of Lot 20 were owned by the AAA Oil Company in 1962 and were released to the Vickers Refining Company in 1969. Safeway Stores, Inc. owned Lot 1 in 1963. Lots 1-10 were owned by Agden Building Company in 1959.

5.2.5 Tri-County Health Department Records

A review of the Tri-County Health Department records was conducted. A summary of the records review is presented below and has been organized as either FAMC or surrounding property.

5.2.5.1 Records for FAMC

A review of the Tri-County Health Department records identified several spills and fires that occurred at FAMC. On 1 July 1982, Building No. 896, a storage building at FAMC, caught fire. The facility was a wood-framed building storing 49 55-gallon drums, including 33 drums of potassium hydroxide, two drums of floor wax solution, 11 drums of motor lubricant oil, two drums of wax stripper, one drum of unknown substance, and 15 "H" or "K" bottles of oxygen. The exact location of Building No. 896 has not been documented, but Mr. Richard Jones, City of Aurora Fire Chief, remembered the fire in the former location of Building No. 245.

On 21 March 1990, Building No. 270 at FAMC was confirmed to have UST contamination due to a petroleum product release from a UST. Review of a Tri-County Health Department 1978 landfill map indicated one landfill located on the northeast corner of FAMC property. A letter dated 29 February 1972 from FAMC to the Tri-County Health Department indicated that an incinerator at FAMC had a capacity violation, and an abatement deadline of 13 July 1972 was issued.

A letter dated 19 July 1972 from FAMC to the Tri-County Health Department stated that municipal solid waste generated at FAMC currently being stored in 152 dumpsters at FAMC would be disposed of in the onsite sanitary landfill. FAMC would use onsite disposal for approximately 18 months until compactor trucks could be purchased. At

that time, the disposal of compacted refuse would be conducted at the Lowry Bombing Range.

5.2.5.2 Records for Property Surrounding FAMC

Review of the Tri-County Health Department records for properties in the vicinity of FAMC indicated the presence of several gasoline stations that had historical releases with the potential to impact FAMC. These were previously discussed in Section 5.2.3.

The Amoco Oil Station located at 14115 East Colfax Avenue had a confirmed UST release in 1989. The records indicated that the release had no impact to groundwater, and that the soils have been remediated.

A drinking water well located at 1800 Potomac Street, immediately east and upgradient from FAMC, showed benzene, toluene, and xylenes contamination in July 1986.

Additional records from the Tri-County Health Department indicated the presence of a landfill along the former Highline Canal, which ran parallel to Peoria Street, immediately west of FAMC. Methane gas surveys were performed north of Colfax Avenue to Montview Boulevard by the Tri-County Health Department in April 1978. The main area of concern was in the vicinity of Paris Elementary School, where an 11-percent subsurface gas level was observed. The alleyway between 17th and 19th Avenues and Paris and Peoria Streets revealed 10 percent and 32 percent Lower Explosive Limits (LELs), respectively. An additional landfill was shown in the area of the trailer park, across Tollgate Creek immediately east of FAMC.

5.2.6 City of Aurora Records

Several departments within the City of Aurora assisted by providing information and records pertaining to FAMC and surrounding properties. The City of Aurora Historical Museum and Fire Department were the primary sources of information. Results of a records review for these two organizations is presented below. The records review has been organized by FAMC or surrounding properties, where appropriate.

5.2.6.1 City of Aurora Historical Museum

A review of historical City of Aurora telephone directories presented the business names and addresses of property adjacent to FAMC. A review of the 1952 City Directory indicated that the Fitzsimons Corner Filling Station was located at 1501 Peoria Street, on the northwest corner of the Colfax Avenue and Peoria Street intersection. The American War Mothers National Memorial Home was located at 1601 Peoria Street. The 1955 through 1962 city directories revealed the presence of numerous businesses on the south side of East Colfax Avenue, across the street from FAMC. Table 5.3 lists historical businesses and their addresses for properties adjacent to FAMC. It should be noted that the original business addresses have changed over the years.

TABLE 5.3

HISTORICAL BUSINESSES AND ADDRESSES FOR PROPERTY ADJACENT TO FAMC

ENVIRONMENTAL BASELINE SURVEY
FITZSIMONS ARMY MEDICAL CENTER
AURORA, COLORADO

Address (1955-1956)	Business (1955-1956)	Address (1959)	Business (1959)	Address (1962)	Business (1962)
12100 East Colfax Avenue	Town House Supper Club	12100 East Colfax Avenue	Town House Restaurant	12200 East Colfax Avenue	Fitzsimons Motel and Apartments
12200 East Colfax Avenue	Fitzsimons Courts	12290 East Colfax Avenue	Fitzsimons Motor Courts	12222 East Colfax Avenue	Golden Point Drive-in
12300 East Colfax Avenue	Melody Lodge Motel	12390 East Colfax Avenue	Melody Lodge Motel	12390 East Colfax Avenue	Melody Lodge Motel
12400 East Colfax Avenue	Bronze Lantern Motel	12470 East Colfax Avenue	Bronze Lantern Motel	12400 East Colfax Avenue	Bronze Lantern Motel
12500 East Colfax Avenue	Blue Spruce Motor Court	12500 East Colfax Avenue	Blue Spruce Motel	12500 East Colfax Avenue	Blue Spruce Motel
12510 East Colfax Avenue	Wrangler Motel	12590 East Colfax Avenue	Wrangler Motel	12590 East Colfax Avenue	The Wrangler Motel
12580 East Colfax Avenue	West Wind Motel	12680 East Colfax Avenue	West Wind Motel	12680 East Colfax Avenue	West Wind Motel
12590 East Colfax Avenue	Manor House Motel	12700 East Colfax Avenue	Manor House Motel	12700 East Colfax Avenue	Manor House Motel
12596 East Colfax Avenue	Voight Service Station	12796 East Colfax Avenue	Voight Oil Company	12796 East Colfax Avenue	Voight Oil Company
12600 East Colfax Avenue	E. Drive-In Theatre	12800 East Colfax Avenue	East Drive-In Theatre	12800 East Colfax Avenue	East Drive-In Theatre
12650 East Colfax Avenue	Capri Mobile Park	12900 East Colfax Avenue	Capri Mobile Park	12900 East Colfax Avenue	Capri Mobile Park
12700 East Colfax Avenue	Acheson F C			13130 East Colfax Avenue	A&W Drive-In
12800 East Colfax Avenue	Cliff's Grocery			13180 East Colfax Avenue	Pete's Mobile Service & Garage
12800 East Colfax Avenue	Herb's Auto Repair			13190 East Colfax Avenue	Cliff's Grocery Store

TABLE 5.3 (Continued)

HISTORICAL BUSINESSES AND ADDRESSES FOR PROPERTY ADJACENT TO FAMC

ENVIRONMENTAL BASELINE SURVEY
FITZSIMONS ARMY MEDICAL CENTER
AURORA, COLORADO

Address (1955-1956)	Business (1955-1956)	Address (1959)	Business (1959)	Address (1962)	Business (1962)
12800 East Colfax Avenue	Kurt's Mobile Service Station			13194 East Colfax Avenue	Harmony Bar & Lounge
12820 East Colfax Avenue	Blue Bell Bar and Cafe			13250 East Colfax Avenue	Evans View Motel
12850 East Colfax Avenue	Evans View Motel			13388 East Colfax Avenue	Sands Motel
12888 East Colfax Avenue	Lor-Fen Motel			13396 East Colfax Avenue	Trailer Haven Court
12900 East Colfax Avenue	Tanton Brothers Drilling Company			13400 East Colfax Avenue	Holiday Courts
12900 East Colfax Avenue	Trailer Haven Trailer Court			13490 East Colfax Avenue	Sandy Jo Courts
13000 East Colfax Avenue	Holiday Courts			13500 East Colfax Avenue	Apartments
13100 East Colfax Avenue	Sandy Jo Courts			13730 East Colfax Avenue	Sugarman's Sammy Restaurant & Lounge
13851 East Colfax Avenue	Village Trailer Park			13740 East Colfax Avenue	Bowl Aurora
13995 East Colfax Avenue	Allied Trailer Sales			13799 East Colfax Avenue	Aurora Chamber of Commerce
				13800 East Colfax Avenue	Holiday Inns of America
				13851 East Colfax Avenue	Village Trailer Park

TABLE 5.3 (Continued)

HISTORICAL BUSINESSES AND ADDRESSES FOR PROPERTY ADJACENT TO FAMC

ENVIRONMENTAL BASELINE SURVEY
FITZSIMONS ARMY MEDICAL CENTER
AURORA, COLORADO

Address (1955-1956)	Business (1955-1956)	Address (1959)	Business (1959)	Address (1962)	Business (1962)
				13995 East Colfax Avenue	Country Liquor Store
				14111 East Colfax Avenue	Gilmer Motors/Oil Co
1501 Peoria Street	Fitzsimons Corner Service Station	1501 Peoria Street	Fitzsimons Corner Service Station	1501 Peoria Street	Fitzsimons Corner Service Station
1601 Peoria Street	American Mothers National Memorial Home	1601 Peoria Street	American War Mothers National Memorial Home	1601 Peoria Street	Clemmer, ML
1725 Peoria Street	SOS Motel	1725 Peoria Street	SOS Motel	1725 Peoria Street	SOS Motel
		1795 Peoria Street	Fitzsimons Chevron Service Station	1795 Peoria Street	Walt's Chevron

5.2.6.2 City of Aurora Fire Department

The City of Aurora Fire Department researched their records and provided information pertinent to properties adjacent to FAMC. The records primarily identified current and former gasoline stations adjacent to FAMC. Review of a Phase I Environmental Site Assessment and the Tank Removal Report performed for 13130 East Colfax Avenue indicated that two 10,000-gallon USTs were removed from this site in October 1989. At the time the tanks were removed, no indication of contamination was noted. The soil samples collected from beneath the tanks did not reveal the presence of BTEX or TPH contamination.

The City of Aurora Fire Department, like the Tri-County Health Department and the State of Colorado Oil Inspector's Office, retained information pertaining to several gasoline stations located adjacent to FAMC. These facilities include the Acorn Petroleum, Inc., gasoline station located at 13690 East Colfax Avenue, the Conoco gasoline station located at 1395 Peoria Street, and the RTD facility located at 14100 East Colfax Avenue.

5.2.6.3 City of Aurora Fire Department Hazardous Material Team Logbook

A review of the City of Aurora Fire Department Hazardous Materials Team logbook revealed dates of hazardous substances and petroleum product incidents, along with a brief description of each response. Recordkeeping by the hazardous materials team has been conducted since 1982.

5.2.6.4 Records for FAMC

On 13 August 1991, the City of Aurora Fire Department responded to a call from FAMC concerning a leaking liquid nitrogen tank. The team turned the shutoff valve, and the leak was stopped.

On 11 November 1990, the team responded to a call from FAMC concerning a possible hazardous substance leak in Building No. 616, the hazardous waste accumulation building. Although water was overflowing in the hazardous waste accumulation building, analysis of water samples did not reveal the presence of contamination.

On 31 August 1984, the City of Aurora team responded to a call from FAMC. FAMC personnel explained that a 1-pound bottle of crystallized picric acid had been found in a chemical refrigerator. The Fort Carson bomb squad was called to remove the bottle.

On 10 June 1987, the team responded to a call from FAMC concerning several drums of potassium ferrous cyanide. Upon preliminary investigation, none of the drums was determined to be leaking. The containers were sampled and determined to be byproduct waste from a printing operation. The containers were placed in overpack containers and disposed.

5.2.6.5 Records for Property Surrounding FAMC

A review of the City of Aurora Fire Department Hazardous Materials Team Records revealed several incidents that occurred at properties surrounding FAMC. A commercial floor cleaning machine had been knocked into the grease pit at 14100 East Colfax, the RTD Bus Garage, causing the batteries to leak. The machine and batteries were removed from the pit, and the area was neutralized with soda ash and flushed with water. Another incident at the RTD Bus Garage was a 100-500-gallon diesel spill into Tollgate Creek. Seven booms were placed in Tollgate Creek at the Potomac Street intersection and nine booms were placed in Sand Creek at the Peoria Street intersection. No product was visible in Sand Creek downstream of the Peoria Street intersection.

The hazardous materials team responded to a report of illegal dumping at 2075 Potomac Street on 31 August 1986. Approximately 2 to 3 gallons of paving oil had been dumped into a storm drain culvert entering Tollgate Creek. A summons was issued for improper disposal of a combustible liquid. On 15 October 1986, another call was made from the same address. Waste petroleum solvent was being dumped into and clogging the sewer system.

A call was made from the Colfax and Moline Conoco station where the station attendant admitted losing 600 gallons of gasoline over 30 days. Repair work to the tanks and tank fill pipe was underway. Two feet of gasoline were present in the sumps nearest the tanks. Two of the sumps nearest the tanks were checked and found to be reading 100 percent on the explosive meter. The attendant stated that the sumps had not been pumped out for more than a year.

On 31 July 1994, the hazardous materials team was called to identify three 55-gallon drums of unknown substance behind the Grease Monkey® business at 1521 Peoria Street. Twenty pounds of absorbent were used in the cleanup.

5.2.7 FAMC Records

A review of the following FAMC databases and records was conducted:

- Hazardous material inventory database,
- Hazardous waste inventory database,
- Spills database,
- UST database,
- Asbestos records,
- PCB records,
- Radon records,
- Radiological records, and
- Real Property records.

These databases and records were obtained from the FAMC DPW and the Health Physics Organization and are summarized below.

5.2.7.1 Hazardous Material Inventory Database

Information pertaining to the Hazardous Material Inventory Database was obtained from the report, *Hazardous Material Inventory for Fitzsimons Army Medical Center* (Parsons ES, 1994). The Hazardous Material Inventory Database was reviewed to identify areas where hazardous and nonhazardous substances have been stored for more than one year. A review of the database identified 64 installation buildings, sites, or activities where hazardous and nonhazardous substances were being used or stored. Documentation required by the Local Emergency Planning Committee (LEPC) was included in the report. Appendix C contains a listing of buildings that store hazardous and nonhazardous substances identified in the Hazardous Material Inventory Database and during the EBS investigation.

5.2.7.2 Hazardous Waste Inventory Database

The Hazardous Waste Inventory Database was reviewed to identify areas where hazardous waste had been routinely generated in the past. As hazardous waste is generated and requires disposal, it is sent to Building No. 261 for accumulation for up to 90 days. From Building No. 261, the waste is subsequently disposed of at a permitted offsite location. Tables 5.4 and 5.5 list generators and types of hazardous wastes shipped offsite from FAMC in 1994 and 1995, respectively.

5.2.7.3 Spills Database

The Spills Database has been maintained by FAMC since 1991 and was reviewed to identify locations at FAMC where hazardous substance spills have occurred. A review of the database indicated that Building Nos. 410, 500, and 628 have had more than one spill. A summary of the spill information is presented in Table 5.6. Only those spills which had the potential to impact the environmental condition of the property (occurred outside, migrated to the outside, or were not cleaned up) were used in the EBS.

5.2.7.4 Storage Tank Database

A review of the UST and AST Systems Database indicated that several tanks are or have been in use at FAMC. This listing is presented in Tables 5.7 and 5.8.

5.2.7.5 Asbestos Records

Management of asbestos at FAMC has historically been conducted on an as-needed basis. The majority of the buildings at FAMC have undergone some asbestos abatement, while the majority of underground utility lines and crawlspaces have been fully abated for asbestos.

TABLE 5.4
FAMC HAZARDOUS WASTE GENERATORS 1994
ENVIRONMENTAL BASELINE SURVEY
FITZSIMMONS ARMY MEDICAL CENTER
AURORA, COLORADO

BUILDING	WASTE NAME	GENERATOR	WT LB
143	150 Premium Solvent	Marty's Garage	79
410	Acetic Acid, Glacial	Pharmacy	41
410	Acetic Acid, Glacial - 5%	Pharmacy	80
405	Acetic Anhydride	DCI - Immunology	5
515	Acetone	Pathology - Anatomic	135
500	Acetone - Unused	Nursing - 1E	3
601	Acetonitrile (100%)	DCI - Immunology	12
602	Acetonitrile 8%	Pathology - Special Chem	62
602	Acetonitrile Mixture (8%)	Pathology - Special Chem	59
602	Acetonitrile/Trifluoroacetic Acid	DCI - Immunology	2
602	Acrylamide	DCI - Cell Physiology	5
628	Alloy	Optical Fab Lab	553
628	Alloy Spill	Optical Fab Lab	154
500	Amalloy	Radiation Therapy	259
602	Ammonia Hydroxide	Pathology - Special Chem	3
410	Ammoniated Mercury (Mercuric Ammonium Chloride)	Pharmacy	1
600	Ammonium Hydroxide	DCI - Molecular Biology	48
270	Aqueous Brake Solution	Auto Hobby	129
500	B5 Fixative	Pathology	25
212	Batteries, Alkaline	DOL - Med Maint	125
601	Black and White Fixer	DCI - Cell Physiology	49
410	Cal-Stat	Pharmacy	42
602	Carbon Disulfide	AEHA - Lab	32
820	Chemical Detector Kit - Agent M256 Filters	Reserve - 24Psyop	5
418	Chromium Potassium Sulfate	Nursing - Dermatology	3
500	Collodion USP	Pulmonary Function Lab	2
602	Corrosive Liquid with Metals	AEHA - Lab	53
602	Corrosive Metal Waste	AEHA - Lab	44
602	Cyanide mixture	Pathology - Special Chem	25
600	DNA Synthesizer	DCI - Biochemistry	8
601	Dichloromethane	DCI - Immunology	73
118	Dispersant for Plotters	DPW	18
405	Dispersant, Savin	Allergy/Vet. Svc.	35
405	Dispersant, Savin isoparaffins	Allergy/Vet. Svc.	7
212	Dispersant/Toner Mixture - Savin	DOL - Equipment Turnin	6
600	DrBRad	DCI - Biochemistry	52
N/A	Empty Drum - EDM fluid	DPW	330
410	Epinephrine	Pharmacy	58
209	Etch-Klenz	DPW - Paint Shop	47
410	Ethanol - Unused	Pharmacy	28
502	Ethanol 95-95%	DCI - Biometrics	32
601	Ethyl Acetate	DCI - Immunology	15

TABLE 5.4 (Continued)
FAMC HAZARDOUS WASTE GENERATORS 1994
ENVIRONMENTAL BASELINE SURVEY
FITZSIMMONS ARMY MEDICAL CENTER
AURORA, COLORADO

BUILDING	WASTE NAME	GENERATOR	WT LB
515	Ethyl alcohol/Eosin/Hematoxylin	Pathology - Anatomic	381
212	Ethylene Oxide (FAMC-94-049)	DOL	3
601	Film	DCI - Immunology	35
820	Filter Element Set	Reserve - 24Psyop	5
628	Filter, OFL	Optical Fab Lab	30
500	Fixer - Used from Radiology	Radiology	7556
602	Formaldehyde	Pathology - Special Chem	3562
500	Formaldehyde Spill	Pathology - Hematology	265
500	Formalin	Nursing - 1E	10
N/A	Gasoline Spill	DPW	192
N/A	Gasoline Spill/Liquid	DPW	36
602	HMStds (Heavy Metal Standards)	AEHA - Lab	5
602	Hydrochloric Acid - 1 N	AEHA - Lab	19
143	Immersion Cleaner	Marty's Garage	188
600	Iodide	DCI - Biochemistry	4
410	Isopropanol	Pharmacy	44
600	Ketopro	DCI - Biochemistry	1
146	Kleen Away II	DPW - Warehouse	2860
146	Kleen Away II - Spill	DPW - Warehouse	475
243	LC-100	DOL	2400
601	Lead	DCI - Cell Physiology	835
212	Lead Acid Batteries	DOL - Med Maint	325
N/A	Lead Acid Battery	DPW	140
N/A	Lead Debries Waste from Contractor	FAMC	1200
601	Lead Lining	DCI - Cell Physiology	550
N/A	Lead and ?	FAMC	1200
N/A	Lead contaminated poly - Gonzales Painting	FAMC	1900
N/A	Lead contaminated water - Gonzales Painting	FAMC	450
600	LiR	DCI - Biochemistry	3
601	Mercuric Iodide	AEHA - Lab	2
602	Mercuric Iodide, Red	AEHA - Lab	2
N/A	Mercury - Metallic	FAMC	10
148	Mercury Switches	DPW - Electrical	3
N/A	Mercury Thermometer	DPW	6
N/A	Mercury, Broken Thermometer	DPW	9
602	Mercury/Sodium Hydroxide	AEHA - Lab	14
602	Methanol	Pathology - Special Chem	67
500	Methanol - 100%	Pathology - Hematology	1170
500	Methanol - 16%	Pathology - Hematology	2385
N/A	Methanol - Unused	DPW	1
500	Methanol Spill - 100%	Pathology - Hematology	120
410	Mixed Drugs with Epinephrine (FAMC-94-035)	Pharmacy	30

TABLE 5.4 (Continued)
FAMC HAZARDOUS WASTE GENERATORS 1994
ENVIRONMENTAL BASELINE SURVEY
FITZSIMMONS ARMY MEDICAL CENTER
AURORA, COLORADO

BUILDING	WASTE NAME	GENERATOR	WT LB
209	Muriatic Acid	DPW	16
N/A	N,N,Dimethylformamide	DPW	1
405	N,N-Dimethyl formamide & 4-Dimethylaminopyridine	DCI - Immunology	7
148	ND-66	DPW - Plumbing	120
212	NICAD	DOL - Med Maint	99
500	NICAD Batteries	Surgery - Anesthesia	11
600	NICHPLC	DCI - Biochemistry	18
130	Naptha	DPW - Housing	28
601	Ninhydrin in Ethanol	DCI - Immunology	1
500	Nitric Acid - 0.5%	DCI - Biochemistry	16
601	Osmium Tetroxide	DCI - Cell Physiology	2
602	Paint Chip Samples	AEHA - Lab	10
243	Panther Alpha Lens Liquid	DOL	960
500	Paps Fixative	Nursing - 1E	9
270	Parts Cleaner	Auto Hobby	401
143	Petroleum Naptha 105	Marty's Garage	189
600	PhenMix	DCI - Biochemistry	18
601	Phenol	DCI - Cell Physiology	16
410	Phenol - 90%	Pharmacy	4
601	Phenol in Ethanol	DCI - Immunology	1
601	Phenylisothiocyanate/n-Heptane	DCI - Immunology	1
601	Piperidine	DCI - Immunology	5
601	Potassium Cyanide in Pyridine	DCI - Immunology	1
602	Potassium Cyanide in Sodium Hydroxide	AEHA - Lab	6
820	Refill Chemical Agent M229/Filters	Reserve - 24Psyop	2
602	Sequencer Waste	DCI - Immunology	14
602	Sequencer Waste B	DCI - Immunology	7
247	Shower Curtain Wash from Acetic Acid Spill	DPW/DOL	245
628	Simple Green (Deblock)	Optical Fab Lab	13500
405	Sodium Azide	Allergy	2
600	Sodium amalgam	DCI	3
515	Spent Color Fixer	DOIM	367
600/515	Spent Fixer - Black and White Film	DCI/DOIM	572
820	Stabilizer	Reserve - 24Psyop	25
600	Steroids	DCI - Biochemistry	23
243	Strip-Away	DOL	1200
511	Sudan Black B Staining Reagent	Endocrinology	2
628	Surface Saver Tape	Optical Fab Lab	2236
601	Synthesizer Waste	DCI - Immunology	28
601	Tetrahydrofuran - 5%	DCI - Immunology	23
602	Tolidine with methanol	Pathology - Special Chem	5
515	Toluidine	Pathology - Anatomic	8

TABLE 5.4 (Continued)
FAMC HAZARDOUS WASTE GENERATORS 1994
ENVIRONMENTAL BASELINE SURVEY
FITZSIMMONS ARMY MEDICAL CENTER
AURORA, COLORADO

BUILDING	WASTE NAME	GENERATOR	WT LB
N/A	Toner	DPW	10
405	Toner - Savin	Allergy/Vet. Svc.	26
118	Toner, Pre-mixed for Electrostatic Plotters	DPN	9
243	Toner, Savin 7300	DOL - Equipment Turnin	44
601	Trichloroacetic Acid	DCI - Cell Physiology	16
410	Trichloroacetic Acid - 25%	Pharmacy	2
410	Trichloroacetic Acid - 70%	Pharmacy	2
601	Trifluoroacetic Acid - 25%	DCI - Immunology	2
601	Trifluroacetic acid	DCI - Immunology	5
601	Trimethylamine Solution - 12.5%	DCI - Immunology	4
514	ValFix	DOL	3
514	ValFix (Excess dental amalgam)	DENTAC	3
N/A	Windows contaminated with lead based paint	FAMC	6270
N/A	X-ray fixer - spent	FAMC	18582
602	Xylene	AEHA - Lab	145
600	p-Chloromercuribenzoate	DCI	1
600	p-Chloromercuribenzoic Acid	DCI	1

TABLE 5.5
FAMC HAZARDOUS WASTE GENERATORS 1995
ENVIRONMENTAL BASELINE SURVEY
FITZSIMONS ARMY MEDICAL CENTER
AURORA, COLORADO

BUILDING	WASTE NAME	GENERATOR	WT LB
143	150 Premium Solvent	Marty's Garage	134
628	Absorbants/"Old" Deblocking Water	FAMC	23
265	Acetic Acid, Glacial	DPW - Sewage Txt	15
502	Acetone	DCI - Biometrics	41
602	Acetonitrile 8%	Pathology - Special Chem	136
820	Aliphatic Polyurethane	Reserve - 5502d	3
628	Alloy	Optical Fab Lab	241
500	Amalloy	Radiation Therapy	209
600	Ammonia Hydroxide	DCI - Biochemistry	22
118	Ammonia Plus Solution	DPW	58
600	Ammonium Persulfate	DCI	1
143	Aqueous Brake Solution	Marty's Garage	103
600	Arsenic AAS Standard	DCI	1
N/A	Asphalt/Diesel/Water	FAMC	450
N/A	Asphalt/Diesel/Water Sludge/Debries	FAMC	98
628	Auto Coat Blue	USAMEOS - OFL	550
628	Auto Coat Yellow	USAMEOS - OFL	30
N/A	Batteries, Alkaline	FAMC	42
N/A	Benzoin Spray	Nursing	1
514	Bite Wings	DENTAC	8
500	Broken Themometers in Glycerin	Pathology - Chemistry	7
820	Calcium Hypochlorite	Reserve - 5502d	5
602	Carbon Disulfide	AEHA - Lab	24
504	Carbon Removing Compound	Provost Marshal	49
622	Cargo Batteries (Lead Acid)	DOIM	510
601	Charcoal	DCI	5
212	Chemdip	DOL	50
149	Chemsearch Naturalizer Orange Oil Degreaser	DPW - Metals Shop	1
149	Chemsearch Yield	DPW - Metals Shop	1
149	Chemstrip Paint Varnish and Gasket Remover	DPW - Metals Shop	1
601	Chloroform	Pathology - Special Chem	81
601	Chloroform Mixture	Pathology - Special Chem	19
515	Chromic Acid, 10%	Pathology - Anatomic	14
820	Cleaning Compound - Degreaser	Reserve - 5502d	116
515	Clear-Rite 3	Pathology - Anatomic	24
149	Cutting and Tapping Fluid	DPW - Metals Shop	21
515	Cyto-Stain	Pathology - Anatomic	2
600	DNA Synthesizer	DCI - Biochemistry	35
504	Decontamination Kit M258/M258A1	Provost Marshal	1
504	Decontamination Reimpregnation Kit M13	Provost Marshal	4
149	Demkote Industrial Spray	DPW - Metals Shop	1

TABLE 5.5 (Continued)
FAMC HAZARDOUS WASTE GENERATORS 1995
ENVIRONMENTAL BASELINE SURVEY
FITZSIMONS ARMY MEDICAL CENTER
AURORA, COLORADO

BUILDING	WASTE NAME	GENERATOR	WT LB
N/A	Diesel Fuel	DPW	137
600	Diesel Fuel/Water	USAMEOS	70
143	Diesel Sludge	AAFES - Marty's Garage	147
820	Dolchem Sealant	Reserve - 5502d	4
600	DrBRad	DCI - Biochemistry	12
149	Dri-Moly	DPW - Metals Shop	0
23	Economist	DPCA - Outdoor Rec.	350
410	Epinephrine	Pharmacy	24
N/A	Epoxy Adhesive - Part A	Earth Day	13
N/A	Epoxy Adhesive - Part B	Earth Day	11
817	Epoxy and Lacquer Thinner	AAFES - PX	3
601	Ethanol 60-70%	DCI - Immunology	20
502	Ethanol 85-95%	DCI - Biometrics	32
515	Ethyl alcohol/Eosin/Hematoxylin	Pathology - Anatomic	1285
820	Filter Element Set	Reserve	22
247	Fixer Spill	DOL	22
149	Flair Aerosol Air Sanitizer	DPW - Metals Shop	1
628	Flammable Aerosol Labpack - Prepare	Optical Fab Lab	1
628	Flammable Aerosol Labpack - Removal	Optical Fab Lab	106
149	Flammable Aerosols	DPW - Metals Shop	56
507	Flammable Liquids Labpack	Pathology - Special Chem	119
820	Formaldehyde - cresolated	Reserve - 919	1
23	Gasoline	DPCA	142
N/A	Gasoline Spill	DPW	25
418	H & E Stain - 2	Nursing - Dermatology	9
418	H & E Staining	Nursing - Dermatology	8
601	HEPB	DCI - Microbiology	51
601	Hemotoxylin CP	DCI	88
149	Hy Zinc	DPW - Metals Shop	1
628	Hydrosol Lens Pre-Coat	USAMEOS - OFL	180
628	Hydrosol Lens Precoat - Red	Optical Fab Lab	9
143	Immersion Cleaner	Marty's Garage	233
820	Isopropanol	Reserve - 5502d	55
149	Kool Lube Cutting & Tapping Fluid	DPW - Metals Shop	1
212	Lead Acid Batteries	DOL - Med Maint	477
212	Lead Acid Battery	DOL - Med Maint	557
515	Lead Solution	Pathology - Anatomic	4
600	LiR	DCI - Biochemistry	5
820	M256 Chemical Agent Detector Kit	Reserve - 5502d	8
820	M58A1 - Training Skin Decontamination Kit	Reserve - 5502d	21
600	Magnesium Nitrate	DCI	1

TABLE 5.5 (Continued)
FAMC HAZARDOUS WASTE GENERATORS 1995
ENVIRONMENTAL BASELINE SURVEY
FITZSIMONS ARMY MEDICAL CENTER
AURORA, COLORADO

BUILDING	WASTE NAME	GENERATOR	WT LB
167	Mather 80	DPCA - Golf Course	50
212	Mercury Batteries	DOL - Med Maint	1
215	Mercury Debries	DPW - Boiler	5
N/A	Mercury Switches	DPW	2
224	Mercury Thermometers	Nursing - Education	10
500	Mercury Thermometers in Water	Pathology - Blood Bank	4
602	Mercury Thermometers, Broken	CHPPM	2
602	Mercury Vapor Lamp	DCI - Microbiology	3
403	Mercury dialators	GI Clinic	56
500	Methanol - 100%	Pathology - Hematology	207
500	Methanol - 16%	Pathology - Hematology	900
500	Methanol Distillation Sludge	Pathology - Hematology	32
500	Methanol Sludge	Pathology - Hematology	35
600/601	Mixed radioactive waste	DCI	200
600	NADHPLC	DCI	27
504	NICAD Batteries	Provost Marshal	96
600	NICHPLC	DCI - Biochemistry	17
500	NiCad Batteries	Surgery - Anesthesia	7
265	Nitric Acid	DPW - Sewage Txt	11
820	Oil Based Paint	Reserve - 5502d	11
N/A	Oil Based Paint with Metals	DPW	67
N/A	Oil Based Paints/Varnishes	FAMC	90
820	Oil/Lead Based Paint	Reserve - 5502d	67
628	Opti-Coat Green	Optical Fab Lab	92
820	Oraloy	Reserve - 919	1
515	Osmium Tetroxide	Pathology - Anatomic	16
143	Oxford Alkeen HD	DPCA - Martys Garage	9
143	Oxford Fast GLU - Acidic Systems Conc.	DPCA - Martys Garage	6
820	PD 680 Type II Solution	Reserve - 5502d	37
212	Paint By-Product	DOL	140
600	Palladium Nitrate Solid	DCI - Biochemistry	1
600	Palladium Nitrate Solution	DCI - Biochemistry	1
500	Paps Fixative	Nursing - 1E	11
148	Penetrating Fluid	DPW - Plumbing	100
167	Petroleum Naptha	Golf Course	88
143	Petroleum Naptha 105	Marty's Garage	27
600	Phenol Mixture	DCI - Biochemistry	21
224	Phisohex	Nursing	17
265	Phosphoric Acid	DPW - Sewage Txt	38
600	Phosphorous Reagent	DCI	2
628	Pigs	Optical Fab Lab	338

TABLE 5.5 (Continued)
FAMC HAZARDOUS WASTE GENERATORS 1995
ENVIRONMENTAL BASELINE SURVEY
FITZSIMONS ARMY MEDICAL CENTER
AURORA, COLORADO

BUILDING	WASTE NAME	GENERATOR	WT LB
820	Plastic Polish	Reserve - 5502d	99
602	Potassium Cyanide	Pathology - Special Chem	7
628	Potassium Nitrate	Optical Fab Lab	151
N/A	Qwik Prep Embosing	Earth Day	3
601	Reducer	DCI	6
149	SNAP Solvent Degreaser	DPW - Metals Shop	30
628	Sand and Alloy	Optical Fab Lab	225
25	Sand with lead debris	FAMC	11700
N/A	Scotch Guard	Earth Day	3
628	Semi Tech 201-Green	USAMEOS - OFL	20
149	Sherlock Leak Detector Type F	DPW - Metals Shop	1
600	Silver Stain Kit - Oxidizer Solution	DCI	2
600	Silver Stain Kit - Silver Reagent Concentrate	DCI	2
628	Simple Green (Deblock)	Optical Fab Lab	13050
149	Snap	DPW - Metals Shop	1
265	Sodium Hydroxide	DPW - Sewage Txt	11
167	Solvent	Golf Course	234
601	Spent B & W Fixer (DCI)	DCI - Cell Physiology	49
515	Spent B & W Fixer (DOIM)	DOIM	691
515	Spent Color Fixer	DOIM	1365
500	Spent X-ray Fixer	DOL	1800
628	Spray Paints - Assorted Colors	Optical Fab Lab	31
817	Stain	AAFES - PX	2
600	Steroid	DCI - Biochemistry	163
143	Stoddard Solvent	DPCA - Martys Garage	58
602	Sulfuric Acid	Pathology - Special Chem	25
628	Surface Saver Tape	Optical Fab Lab	1636
606	TCE	USAMEOS	121
500	Thermometers in Ethylene Glycol	Pathology - Blood Bank	2
118	Toner - CAD	DPW	10
149	Trump Multipurpose Aerosol Grease	DPW - Metals Shop	1
601	Trypan Blue Dye	DCI - Microbiology	3
817	Turpentine	AAFES - PX	10
515	Tytin and Valiant	DENTAC	1
515	Tytin, Valiant and Fixer	DENTAC	3
149	United 180	DPW - Metals Shop	1
149	United Lift Off 189	DPW - Metals Shop	1
149	United Steel Kote 102	DPW - Metals Shop	1
23	Unknown Oil	DPCA - Outdoor Rec.	2240
820	Valiant	Reserve - 919	3
224	Varnish	Nursing	6

TABLE 5.5 (Continued)
FAMC HAZARDOUS WASTE GENERATORS 1995
ENVIRONMENTAL BASELINE SURVEY
FITZSIMONS ARMY MEDICAL CENTER
AURORA, COLORADO

BUILDING	WASTE NAME	GENERATOR	WT LB
602	Waste Metals	CHPPM	32
500	X-ray Fixer Debries	FAMC	40
500	X-ray fixer - spent	FAMC	27288
215	XL-99	DPW - Boiler	296
224	Xerox Lens and Mirror Cleaner	Nursing	1
515	Xylene	Pathology - Anatomic	766
601	Xylene - Immuno	DCI - Immunology	6
820	Xylene - Unused	Reserve - 5502d	31
270	ZEP Sludge	DPCA - Auto Hobby	20
270	ZEP Solution	DPCA - Auto Hobby	280
149	ZEP Veto Germicidal Bowl Cleaner	DPW - Metals Shop	6
149	Zinc Pro	DPW - Metals Shop	13

TABLE 5.6
HISTORICAL SPILL INFORMATION FROM FAMC SPILL DATABASE
ENVIRONMENTAL BASELINE SURVEY
FITZSIMONS ARMY MEDICAL CENTER
AURORA, COLORADO

Date of Spill	Building No.	Description of Spill	Remediation or Mitigation
5/14/91	247	Leaking container of methylene chloride	Methylene chloride was repackaged and reutilized
5/14/91	526	Lead acid battery exploded; Damage to floor	Spill cleaned up and disposed accordingly
6/19/91	500	Spill of formaldehyde solution	Spill cleaned up and disposed accordingly
8/13/91	628	Spill of drum of corrosive cadmium and lead	Spill cleaned up, damage to floor
10/15/91	212	Leaking drum of acetic acid	Spill cleaned up, damage to floor
11/21/91	410	Accident with trichloroacetic acid	Spill cleaned up, damage to equipment
2/6/92	628	Deblocking wastewater crack in bottom of drum	Spill cleaned up and disposed accordingly
2/26/92	628	Spill of wastewater	Spill cleaned up and disposed accordingly
2/27/92	628	Spill of wastewater	Spill cleaned up and disposed accordingly
5/10/92	500	Spill of formaldehyde and biological specimens	Spill cleaned up and disposed accordingly
6/22/92	410	Ruptured bottle of parafushsin solvents/resorcinol	Spill cleaned up, stained floor
6/23/92	211	Spill of fixer-ammonia thiosulfate	Spill mopped up, went down sanitary sewer
11/10/92	628	Cerium oxide/glass particle to navigable waters	None
2/26/93	500	Mercury spilled	Waste taken to Building 261 for disposal
8/12/93	500	Chemotherapy fluorouracil tube came off patient	Spill cleaned up and disposed accordingly
4/20/94	500	Chemotherapy Taxol came loose from patient	Spill cleaned up and disposed accordingly
4/20/94	528	Diesel truck overflowed 5 gallons	Spill cleaned up and disposed accordingly
5/10/94	143	Solvent tank line broke, spilled petroleum naphtha	Spill cleaned up and disposed accordingly
9/19/94	215	Mercury spill from mercury switch	Spill cleaned up and disposed accordingly
9/12/94	135	Gasoline spill from personal car	Spill cleaned up and disposed accordingly

TABLE 5.7
LIST OF FAMC UNDERGROUND STORAGE TANKS
ENVIRONMENTAL BASELINE SURVEY
FITZSIMONS ARMY MEDICAL CENTER
AURORA, COLORADO

Building Name	Building No.	Capacity of Tank (gal)	Type of Fuel Stored	Status
Post Exchange Gas Station	135	10,000	gasoline	in service
Post Exchange Gas Station	135	10,000	gasoline	in service
Post Exchange Gas Station	135	10,000	gasoline	in service
Post Exchange Gas Station	135	250	waste oil	removed
Logistics Fuel Storage Yard	230	8,265	gasoline	removed
Logistics Fuel Storage Yard	230	7,514	gasoline	removed
Logistics Fuel Storage Yard	230	321	kerosene	removed
Logistics Fuel Storage Yard	230	12,022	gasoline	removed
Heating Plant Fuel Storage	215	34,000	heating fuel	non-BRAC
Heating Plant Fuel Storage	215	34,000	heating fuel	non-BRAC
Heating Plant Fuel Storage	215	34,000	heating fuel	non-BRAC
Heating Plant Fuel Storage	215	34,000	heating fuel	non-BRAC
Heating Plant Fuel Storage	215	34,000	heating fuel	non-BRAC
Heating Plant Fuel Storage	215	34,000	heating fuel	non-BRAC
Heating Plant Fuel Storage	215	34,000	heating fuel	non-BRAC
Heating Plant Fuel Storage	215	34,000	heating fuel	non-BRAC
Heating Plant Fuel Storage	215	34,000	heating fuel	non-BRAC
Heating Plant Fuel Storage	215	34,000	heating fuel	non-BRAC
Heating Plant Fuel Storage	215	34,000	heating fuel	non-BRAC
Heating Plant Fuel Storage	215	34,000	heating fuel	non-BRAC
Hospital	500	1,000	diesel	removed
Hospital	500	2,000	diesel	removed
Hospital	500	6,380	diesel	removed
Water Distribution	20	5,000	gasoline	removed
Auto Hobby Shop	270	500	waste oil	removed
Standby Generator	219	5,000	diesel	removed
Standby Generator	219	5,000	diesel	removed
Standby Generator	219	5,000	diesel	removed
Sewage Treatment Plant	267	550	diesel	removed
Army Reserves	820	4,000	diesel	removed
Army Reserves	821	1,000	diesel	removed
Hospital Generator	532	5,000	diesel	in service
Former Gasoline Station	122	10,000	unknown	removed
Former Gasoline Station	122	10,000	unknown	removed
Former Gasoline Station	122	1,000	unknown	removed
Former UST	142	unknown	unknown	removed
Former UST	227	unknown	unknown	not in service

TABLE 5.8
LIST OF FAMC ABOVEGROUND STORAGE TANKS
ENVIRONMENTAL BASELINE SURVEY
FITZSIMONS ARMY MEDICAL CENTER
AURORA, COLORADO

Building Name	Building No.	Capacity of Tank (gal)	Type of Fuel Stored	Status
Water Distribution AST	29	5,000	diesel fuel	in service
Roads and Grounds Fuel Farm Area	142	500	diesel fuel	in service
Roads and Grounds Fuel Farm Area	142	500	diesel fuel	in service
Roads and Grounds Fuel Farm Area	142	500	diesel fuel	in service
Roads and Grounds Fuel Farm Area	142	500	unleaded gasoline	in service
Golf Course Maintenance	167	250	diesel fuel	in service
Golf Course Maintenance	167	500	gasoline	in service
Golf Course Maintenance	167	500	waste oil	in service
Marty's Garage	270	224	waste oil	in service
Implement Shed	152	300	diesel fuel	removed
Implement Shed	152	100	unleaded gasoline	removed
Tractor Shop	128	500	waste oil	in service
AAFES Service Station	135	224	waste oil	in service
Fire Station	531	600	diesel fuel	in service
Central Energy Plant	290	110,000	diesel fuel	future use
Central Energy Plant	290	110,000	diesel fuel	future use
Central Energy Plant	290	110,000	diesel fuel	future use

5.2.7.6 Polychlorinated Biphenyl Records

A review of the records pertaining to PCBs was conducted to identify areas where PCB-containing transformers may be located or where spills may have occurred at FAMC. A review of inspection logs indicates that PCB transformers were located inside Building Nos. 300 and 500, and were properly disposed of in the 1980s. An effort to sample and analyze oil in electrical equipment installed prior to 1985 at FAMC was conducted in 1990 (HazWaste, 1990). Results of the sampling effort found that one transformer located near Building No. 112 was classified as a PCB transformer (>500 ppm), and transformers located near Building Nos. 109, 149, and 212 were PCB-contaminated. The remaining transformers used as electrical equipment at FAMC were found to contain <50 ppm PCB, which defines non-PCB items. Several internal memoranda indicate the Directorate of Engineering and Housing (DEH) (currently DPW) Salvage Yard was the primary storage area for out-of-service transformers.

5.2.7.7 Radon Records

A search of radon records from DPW was conducted to identify buildings that require radon abatement. Table 5.9 contains the results above 4 pCi/L from sampling performed to date for naturally occurring radon. Of the buildings sampled in 1991, 52 were identified with radon levels above the EPA standard of 4 pCi/L. Followup monitoring was performed in 1992 at those buildings exhibiting radon levels above 8 pCi/L in 1991. In 1995, additional followup monitoring was performed at those buildings exhibiting radon levels above 8 pCi/L in 1992.

5.2.7.8 Radiological Records

Radiological records obtained from the Health Physics Organization were reviewed to identify areas where radioactive materials or wastes have been used or stored. FAMC maintains two types of authority for use and storage of radioactive materials which require an NRC material license and the Department of Army Radiation Authorization (DARA). A material license for the use and storage of radioactive material has been held by FAMC since 1964.

Several types of records were reviewed including the license itself, minutes of Radioisotope Committee Meetings, requests for authorization to use radioactive material, and NRC audit findings. A summary of the radioactive buildings which use or store radioactive material or waste is presented in Table 5.10. Information regarding the type and amount of radioactive material or waste used or stored at FAMC was included when available.

Additional information was obtained regarding Landfill 5, which was used in the 1960s to dispose of low-level radioactive waste. The landfill is located east of Building No. 642. A listing of the type and quantity of radioactive material disposed of in Landfill 5 is provided in Table 5.11. Each line entry in the table represents a specific volume of waste.

TABLE 5.9
RESULTS OF RADON SURVEYS FOR THOSE AREAS EXCEEDING 4 pCi/L
ENVIRONMENTAL BASELINE SURVEY
FITZSIMONS ARMY MEDICAL CENTER
AURORA, COLORADO

Building No.	Location in Building	Sample Date	Average Concentration (PicoCuries/Liter)
B- 1	Basement	1990-1991	5.8
B- 1	Basement	1990-1991	6.0
B- 11 #1	Basement	1990-1991	4.1
B- 11 #2	Basement	1990-1991	6.7
B- 11 #2	Basement	1990-1991	7.1
B- 13	Unit #1	1990-1991	
B- 13 #1	First Floor	1990-1991	5.4
B- 13 #1	First Floor	1990-1991	5.6
B- 13 #1	First Floor	1990-1991	14.7
B- 13 #2	First Floor	1990-1991	4.4
B- 13 #2	Basement	1990-1991	7.5
B- 13 #2	Basement	1990-1991	7.7
B- 14 #2	(First Floor)	1990-1991	4.1
B- 16	Basement	1990-1991	4.8
B- 16	Basement	1990-1991	5.0
B- 24	Basement	1990-1991	5.5
B- 24	Basement	1990-1991	6.8
B- 111 #3	First Floor	1990-1991	4.2
B- 111 #3	First Floor	1990-1991	4.8
B- 113	1st Closet	1990-1991	11.9
B- 113	1st Closet	1990-1991	12.1
B- 113	Cry Room, Speaker Shelf	1995	2.8
B- 113	First Floor, Rear Closet	1990-1991	11.9
B- 113	First Floor, Rear Closet	1990-1991	12.1
B- 117	Basement (South)	1990-1991	5.1
B- 117	Basement (South)	1990-1991	5.2
B- 119	Supply Closet	1990-1991	4.2
B- 132	Break Room	1990-1991	4.0
B- 133	West Supply Closet	1990-1991	4.2
B- 164	Basement	1990-1991	9.3
B- 164	Basement	1990-1991	10.0
B- 164	Basement	1990-1991	11.1
B- 164	Basement	1990-1991	11.6
B- 164 #1	Basement	1990-1991	11.6

TABLE 5.9 (Continued)
RESULTS OF RADON SURVEYS FOR THOSE AREAS EXCEEDING 4 pCi/L
ENVIRONMENTAL BASELINE SURVEY
FITZSIMONS ARMY MEDICAL CENTER
AURORA, COLORADO

Building No.	Location in Building	Sample Date	Average Concentration (PicoCuries/Liter)
B- 164 #1	Basement	1990-1991	11.1
B- 164 #2	Basement	1990-1991	9.3
B- 164 #2	Basement	1990-1991	10.0
B- 168	Basement	1990-1991	4.6
B- 168	Basement	1990-1991	5.0
B- 204	Service Bay	1990-1991	8.9
B- 204	Service Bay	1990-1991	8.9
B- 204	Service Bay, Scooter Storage, Interior Window Ledge	1995	0.3
B- 219	DPW Electrical Whse.	1990-1991	6.1
B- 219	DPW Electrical Warehouse, Shelf Center of Room	1995	7.7
B- 219	DPW Electrical Whse.	1990-1991	6.9
B- 219	DPW Electrical Whse.	1990-1991	8.1
B- 220	Basement - Equipment Room	1991-1992	6.5
B- 220	Basement - Equipment Room	1991-1992	6.5
B- 223	First Floor - Craft	1991-1992	4.5
B- 223	First Floor - Craft Shop	1991-1992	4.9
B- 303	Basement	1991-1992	4.2
B- 401	First Floor	1990-1991	4.5
B- 401	First Floor	1990-1991	4.5
B- 401	Basement	1990-1991	5.0
B- 401	Basement	1990-1991	6.8
B- 402	Basement	1990-1991	4.2
B- 402	Basement	1990-1991	4.7
B- 402	Basement	1990-1991	5.1
B- 402	Basement	1990-1991	5.9
B- 402	Basement	1990-1991	6.6
B- 422	West Storage Closet	1991-1992	4.2
B- 422	West Storage Closet	1991-1992	4.4
B- 422	First Floor Supply Closet	1991-1992	6.0
B- 422	East Supply Closet	1991-1992	6.3
B- 500	Basement-North	1991-1992	4.0
B- 507	Mail Room	1991-1992	4.0

TABLE 5.9 (Continued)
RESULTS OF RADON SURVEYS FOR THOSE AREAS EXCEEDING 4 pCi/L
ENVIRONMENTAL BASELINE SURVEY
FITZSIMONS ARMY MEDICAL CENTER
AURORA, COLORADO

Building No.	Location in Building	Sample Date	Average Concentration (PicoCuries/Liter)
B- 526	Cable Vault (Basement)	1991-1992	6.6
B- 526	Cable Vault (Basement)	1991-1992	6.7
B- 603	Fax/Message Room	1991-1992	11.2
B- 603	Fax/Message Rm	1991-1992	14.2
B- 603	Message Room	1991-1992	16.3
B- 603	Computer Room, north wall	1995	13.9
B- 603	Room 121	1995	1.0
B- 603	Message Room	1991-1992	16.3
B- 631	Shower Room	1991-1992	5.5
B- 631	Shower Room	1991-1992	6.3
B- 700	Basement	1990-1991	4.0
B- 700	Basement	1990-1991	4.0
B- 700	Basement	1990-1991	4.3
B- 700	Basement	1990-1991	4.4
B- 700	Basement	1990-1991	4.5
B- 701	Basement	1990-1991	5.7
B- 701	Basement	1990-1991	5.8
B- 702	Basement	1990-1991	5.6
B- 702	Basement	1990-1991	6.9
B- 704	Basement	1990-1991	7.2
B- 704	Basement	1990-1991	7.6
B- 705 #131	Basement	1990-1991	5.8
B- 705 #131	Basement	1990-1991	5.9
B- 706	Basement	1990-1991	4.0
B- 707 #136	Basement	1990-1991	4.4
B- 710 #142	Basement	1990-1991	4.5
B- 710 #142	Basement	1990-1991	4.6
B- 710 #142	Basement	1990-1991	6.5
B- 711	Basement	1990-1991	6.4
B- 711 #145	First Floor	1990-1991	6.5
B- 712	Basement	1990-1991	4.3
B- 712	Basement	1990-1991	4.4
B- 712	Basement	1990-1991	4.4
B- 713	Basement	1990-1991	5.3

TABLE 5.9 (Continued)
RESULTS OF RADON SURVEYS FOR THOSE AREAS EXCEEDING 4 pCi/L
ENVIRONMENTAL BASELINE SURVEY
FITZSIMONS ARMY MEDICAL CENTER
AURORA, COLORADO

Building No.	Location in Building	Sample Date	Average Concentration (PicoCuries/Liter)
B- 713	Basement	1990-1991	6.0
B- 714	Basement	1990-1991	6.7
B- 714	Basement	1990-1991	7.3
B- 714 #166	First Floor	1990-1991	5.5
B- 715	Basement	1990-1991	5.7
B- 715	Basement	1990-1991	5.8
B- 717	Basement	1990-1991	4.6
B- 720	Basement	1990-1991	5.6
B- 720	Basement	1990-1991	6.0
B- 801	Basement	1990-1991	4.1
B- 801	Basement	1990-1991	4.4
B- 801	Basement	1990-1991	4.6
B- 802	Basement	1990-1991	4.9
B- 802	Basement	1990-1991	5.4
B- 802 #27	First Floor	1990-1991	6.5
B- 803	Basement	1990-1991	4.0
B- 803	Basement	1990-1991	4.1
B- 804	Basement	1990-1991	4.5
B- 804	Basement	1990-1991	5.6
B- 806	Basement	1990-1991	4.0
B- 806	Basement	1990-1991	4.1
B- 807	Basement	1990-1991	4.0
B- 807	Basement	1990-1991	4.7
B- 808	Basement	1990-1991	5.1
B- 808	Basement	1990-1991	5.9
B- 809 #1	Basement	1990-1991	5.9
B- 809 #1	Basement	1990-1991	6.3
B- 809 #2	Basement	1990-1991	4.5
B- 809 #2	Basement	1990-1991	4.8
B- 809 #8	Basement	1990-1991	4.9
B- 809 #8	Basement	1990-1991	5.2
B- 811 #7	Basement	1990-1991	4.1
B- 811	Basement	1990-1991	4.5
B- 811 #6	Basement	1990-1991	5.4

TABLE 5.10
RADIOACTIVE MATERIALS USED OR STORED AT FAMC
ENVIRONMENTAL BASELINE SURVEY
FITZSIMONS ARMY MEDICAL CENTER
AURORA, COLORADO

Building No.	Radioisotope	Maximum Amount of Radioactivity Used (Curies or milliCurries)	Reference Date
260	H-3	Unknown	1995
	C-14	Unknown	1995
	Sc-46	Unknown	1995
	Sr-46	Unknown	1995
	Sn-85	Unknown	1995
	Gd-153	Unknown	1995
	Nb-95	Unknown	1995
402	Unknown*	Unknown	Unknown
403	Co-57	40 mCi	1993
404	Isotopes 1 - 83	50 mCi	1986
405	Unknown*	Unknown	Unknown
500	Co-60	20,000 Ci	1986
	Ga-67	50 mCi	1986
	Sr-90	100 mCi	1986
	Mo-99/Tc-99m	12,000 mCi	1986
	In-111	50 mCi	1986
	I-123	20 mCi	1986
	I-125	500 mCi	1986
	I-131	1,000 mCi	1986
	Xe-133	1,000 mCi	1986
	Cs-137	2,000 mCi	1986
	Gd-153	1.5 Ci	1986
	Ir-192	300 mCi	1986
	Tl-201	250 mCi	1986
	Ra-226	3 mCi	1986
	Isotopes 1 thru 83	200 mCi	1986
	Isotopes 4 thru 84	500 mCi	1986
505	Isotopes 1 thru 84	50 mCi	1989
	Isotopes 1 thru 96	50 mCi	1992
511	P-32	25 mCi	1985
	Cr-51	1 mCi	1985
	Co-57	100 mCi	1985
	Fe-59	100 mCi	1989
	Ga-67	50 mCi	1985
	Mo-99/Tc-99m	12,000 mCi	1985
	In-111	50 mCi	1985
	I-123	20 mCi	1985
	I-125	500 mCi	1985
	I-131	1,000 mCi	1985
	I-131	2 mCi	1989
	Xe-133	2,000 mCi	1985
	Gd-153	1.5 Ci	1986
	Tl-201	250 mCi	1985
	Isotopes 1 thru 83	200 mCi	1986
	Isotopes 4 thru 84	500 mCi	1986

TABLE 5.10 (Continued)
RADIOACTIVE MATERIALS USED OR STORED AT FAMC
ENVIRONMENTAL BASELINE SURVEY
FITZSIMONS ARMY MEDICAL CENTER
AURORA, COLORADO

Building No.	Radioisotope	Maximum Amount of Radioactivity Used (Curies or milliCurries)	Reference Date
600	H-3	50 mCi	1987
	C-14	10 mCi	1987
	P-32	25 mCi	1987
	S-35	15 mCi	1987
	Ca-45	5 mCi	1987
	Cr-51	10 mCi	1987
	Fe-59	5 mCi	1987
	Ni-63	15 mCi	1991
	Zn-65	5 mCi	1987
	Mo-99/Tc-99m	4500 mCi	1987
	In-111	5 mCi	1987
	I-123	20 mCi	1989
	I-125	20 mCi	1987
	I-131	500 mCi	1987
	Cs-137	5 mCi	1987
	Po-210	5 mCi	1987
	Isotopes 1 thru 96	50 mCi	1992
601	H-3	50 mCi	1986
	C-14	25 mCi	1986
	P-32	25 mCi	1986
	S-35	15 mCi	1987
	Ca-45	5 mCi	1986
	Cr-51	10 mCi	1986
	Fe-59	5 mCi	1986
	Ni-63	15 mCi	1987
	Zn-65	5 mCi	1986
	Tc-99m	50 mCi	1986
	In-111	5 mCi	1987
	I-125	10 mCi	1986
	I-131	10 mCi mCi	1986
	Cs-137	5 mCi	1986
	Po-210	5 mCi	1986
602	H-3	150 mCi	1991
	Ni-63	120 mCi	1991
602A, 1st Floor	Co-57	100 uCi	1992
	Fe-59	100 uCi	1992
	I-125	1 mCi	1992
603 (lab)	H-3	150 mCi	1991
	Ni-63	120 mCi	1991
	Isotopes 1 thru 84	50 mCi	1986
	Isotopes 1 thru 96	50 mCi	1992
616	Isotopes 1 thru 83	50 mCi	1986

* NOTE: Review of a radiological survey indicated that swipe samples were taken in these areas. However, sample results could not be located.

TABLE 5.11
RADIOACTIVE WASTE INVENTORY IN LANDFILL 5
ENVIRONMENTAL BASELINE SURVEY
FITZSIMONS ARMY MEDICAL CENTER
AURORA, CO

Date of Disposal	Radioactive Isotope	Type of Material Buried	Activity (MicroCuries)
22 Nov 1961	C-14	Chicken Feces	100
22 Nov 1961	I-131	Rat Carcasses	60
22 Nov 1961	I-131	Paper, trash, etc.	5
22 Nov 1961	C-14	Paper, trash, etc.	5
22 Nov 1961	C-14	Paper, trash, etc.	5
22 Nov 1961	C-14	Paper, trash, etc.	5
22 Nov 1961	I-131	Rats	35
22 Nov 1961	I-131	Rats	65
22 Nov 1961	I-131	Rats	20
22 Nov 1961	I-131	Rats	25
22 Nov 1961	I-131	Rats	45
22 Nov 1961	I-131	Rats	15
22 Nov 1961	I-131	Trash, etc.	5
22 Nov 1961	C-14	Trash, etc.	5
22 Nov 1961	C-14	Trash, etc.	5
27 Dec 1961	I-131	Rat Feces	6
27 Dec 1961	I-131	Rat Feces	6

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TABLE 5.11 (Continued)
RADIOACTIVE WASTE INVENTORY IN LANDFILL 5
ENVIRONMENTAL BASELINE SURVEY
FITZSIMONS ARMY MEDICAL CENTER
AURORA, CO

Date of Disposal	Radioactive Isotope	Type of Material Buried	Activity (MicroCuries)
27 Dec 1961	I-131	Rat Feces	20
27 Dec 1961	I-131	Rat Feces	7
27 Dec 1961	I-131	Rat Feces	6
27 Dec 1961	I-131	Rat Feces	6
27 Dec 1961	I-131	Rat Feces	6
27 Dec 1961	I-131	Trash, etc.	720
27 Dec 1961	C-14	Chicken Feces	2
27 Dec 1961	C-14	Chicken Feces	2
27 Dec 1961	C-14	Chicken Feces	2
27 Dec 1961	C-14	Chicken Feces	2
27 Dec 1961	C-14	Chicken Feces	2
27 Dec 1961	I-131	Rats	400
27 Dec 1961	I-131	Rats	5
27 Dec 1961	I-131	Rats	72
27 Dec 1961	I-131	Rats	6
27 Dec 1961	I-131	Rats	75
27 Dec 1961	I-131	Rats	2

TABLE 5.11 (Continued)
RADIOACTIVE WASTE INVENTORY IN LANDFILL 5
ENVIRONMENTAL BASELINE SURVEY
FITZSIMONS ARMY MEDICAL CENTER
AURORA, CO

Date of Disposal	Radioactive Isotope	Type of Material Buried	Activity (MicroCuries)
27 Dec 1961	I-131	Rats	5
27 Dec 1961	I-131	Rats	5
27 Dec 1961	I-131	Rats	4
27 Dec 1961	I-131	Rats	4
27 Dec 1961	C-14	Rats	8
24 Jan 1962	I-131	Trash, etc.	5
24 Jan 1962	I-131	Trash, etc.	5
24 Jan 1962	I-131	Trash, etc.	5
24 Jan 1962	I-131	Trash, etc.	5
24 Jan 1962	I-131	Trash, etc.	5
24 Jan 1962	I-131	Trash, etc.	5
24 Jan 1962	I-131	Trash, etc.	5
24 Jan 1962	C-14	Chicken Feces	4
24 Jan 1962	C-14	Chicken Feces	5
24 Jan 1962	C-14	Chicken Carcasses	65
24 Jan 1962	C-14	Chicken Food	10
24 Jan 1962	I-131	Rat Feces	20

TABLE 5.11 (Continued)
RADIOACTIVE WASTE INVENTORY IN LANDFILL 5
ENVIRONMENTAL BASELINE SURVEY
FITZSIMONS ARMY MEDICAL CENTER
AURORA, CO

Date of Disposal	Radioactive Isotope	Type of Material Buried	Activity (MicroCuries)
24 Jan 1962	Au-198	Rabbits	1
24 Jan 1962	C-14	Rats	1.7
24 Jan 1962	C-14	Rats	2
24 Jan 1962	C-14	Rats	10
24 Jan 1962	I-131	Rats	10
24 Jan 1962	I-131	Rats	50
28 Feb 1962	I-131	Trash, etc.	5
28 Feb 1962	I-131	Trash, etc.	5
28 Feb 1962	I-131	Trash, etc.	5
28 Feb 1962	I-131	Trash, etc.	9
28 Feb 1962	I-131	Trash, etc.	6
28 Feb 1962	I-131	Trash, etc.	5
28 Feb 1962	I-131	Trash, etc.	5
28 Feb 1962	I-131	Trash, etc.	5
28 Feb 1962	I-131	Trash, etc.	5
28 Feb 1962	I-131	Trash, etc.	5
28 Feb 1962	I-131	Trash, etc.	5

TABLE 5.11 (Continued)
RADIOACTIVE WASTE INVENTORY IN LANDFILL 5
ENVIRONMENTAL BASELINE SURVEY
FITZSIMONS ARMY MEDICAL CENTER
AURORA, CO

Date of Disposal	Radioactive Isotope	Type of Material Buried	Activity (MicroCuries)
28 Feb 1962	I-131	Trash, etc.	5
28 Feb 1962	I-131	Trash, etc.	5
28 Feb 1962	I-131	Trash, etc.	5
28 Feb 1962	I-131	Trash, etc.	5
28 Feb 1962	I-131	Trash, etc.	5
28 Feb 1962	I-131	Rat Feces	20
28 Feb 1962	I-131	Rabbit	10
28 Feb 1962	I-131	Rabbit	10
28 Feb 1962	I-131	Rat	1
28 Feb 1962	I-131	Rat	5
28 Feb 1962	I-131	Rats	10
28 Feb 1962	I-131	Rats	10
28 Feb 1962	I-131	Rat	10
28 Feb 1962	I-131	Rats	20
28 Feb 1962	H3	Rat	282
28 Mar 1962	I-131	Trash, etc.	5
28 Mar 1962	I-131	Trash, etc.	5

TABLE 5.11 (Continued)
RADIOACTIVE WASTE INVENTORY IN LANDFILL 5
ENVIRONMENTAL BASELINE SURVEY
FITZSIMONS ARMY MEDICAL CENTER
AURORA, CO

Date of Disposal	Radioactive Isotope	Type of Material Buried	Activity (MicroCuries)
28 Mar 1962	I-131	Trash, etc.	5
28 Mar 1962	I-131	Trash, etc.	5
28 Mar 1962	I-131	Trash, etc.	5
28 Mar 1962	I-131	Trash, etc.	5
28 Mar 1962	I-131	Trash, etc.	5
28 Mar 1962	I-131	Trash, etc.	5
28 Mar 1962	I-131	Trash, etc.	5
28 Mar 1962	I-131	Trash, etc.	5
28 Mar 1962	I-131	Trash, etc.	5
28 Mar 1962	I-131	Trash, etc.	5
28 Mar 1962	I-131	Trash, etc.	5
28 Mar 1962	C-14	Trash, etc.	1
28 Mar 1962	C-14	Rats	10
28 Mar 1962	I-131	Rats	6
28 Mar 1962	Au-198	Rabbit	17
28 Mar 1962	I-131	Rat	5
28 Mar 1962	I-131	Rat	5

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TABLE 5.11 (Continued)
RADIOACTIVE WASTE INVENTORY IN LANDFILL 5
ENVIRONMENTAL BASELINE SURVEY
FITZSIMONS ARMY MEDICAL CENTER
AURORA, CO

Date of Disposal	Radioactive Isotope	Type of Material Buried	Activity (MicroCuries)
28 Mar 1962	I-131	Rat	5
25 Apr 1962	I-131	Trash, etc.	5
25 Apr 1962	I-131	Trash, etc.	5
25 Apr 1962	I-131	Trash, etc.	1
25 Apr 1962	I-131	Trash, etc.	5
25 Apr 1962	I-131	Trash, etc.	5
25 Apr 1962	I-131	Trash, etc.	5
25 Apr 1962	Zn-65	Trash, etc.	2
25 Apr 1962	Zn-65	Rats	4
25 Apr 1962	Zn-65	Rat	4
25 Apr 1962	Zn-65	Trash, etc.	3
25 Apr 1962	Zn-65	Rat Feces	4
25 Apr 1962	I-131	Rats	200
25 Apr 1962	I-131	Rats	30
25 Apr 1962	I-131	Rats	35
25 Apr 1962	I-131	Rats	14
23 May 1962	I-131	Trash, etc.	5

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TABLE 5.11 (Continued)
RADIOACTIVE WASTE INVENTORY IN LANDFILL 5
ENVIRONMENTAL BASELINE SURVEY
FITZSIMONS ARMY MEDICAL CENTER
AURORA, CO

Date of Disposal	Radioactive Isotope	Type of Material Buried	Activity (MicroCuries)
23 May 1962	I-131	Trash, etc.	5
23 May 1962	I-131	Trash, etc.	5
23 May 1962	I-131	Trash, etc.	5
23 May 1962	I-131	Trash, etc.	5
23 May 1962	I-131	Trash, etc.	5
23 May 1962	I-131	Trash, etc.	5
23 May 1962	I-131	Trash, etc.	5
23 May 1962	Zn-65	Trash, etc.	10
23 May 1962	Zn-65	Trash, etc.	5
23 May 1962	Zn-65	Rats	4
23 May 1962	I-131	Rats	25
23 May 1962	I-131	Rats	40
23 May 1962	I-131	Rats	30
23 May 1962	I-131	Trash, etc.	15
27 Jun 1962	I-131	Trash, etc.	5
27 Jun 1962	I-131	Trash, etc.	5
27 Jun 1962	I-131	Trash, etc.	5

TABLE 5.11 (Continued)
RADIOACTIVE WASTE INVENTORY IN LANDFILL 5
ENVIRONMENTAL BASELINE SURVEY
FITZSIMONS ARMY MEDICAL CENTER
AURORA, CO

Date of Disposal	Radioactive Isotope	Type of Material Buried	Activity (MicroCuries)
27 Jun 1962	I-131	Trash, etc.	5
27 Jun 1962	I-131	Trash, etc.	5
27 Jun 1962	I-131	Trash, etc.	5
27 Jun 1962	I-131	Trash, etc.	5
27 Jun 1962	I-131	Trash, etc.	5
27 Jun 1962	I-131	Trash, etc.	5
27 Jun 1962	Zn-65	Trash, etc.	5
27 Jun 1962	Zn-65	Trash, etc.	7
27 Jun 1962	Zn-65	Trash, etc.	5
27 Jun 1962	Zn-65	Trash, etc.	5
27 Jun 1962	Zn-65	Trash, etc.	5
27 Jun 1962	Zn-65	Trash, etc.	7
27 Jun 1962	Zn-65	Trash, etc.	5
27 Jun 1962	Zn-65	Trash, etc.	5
27 Jun 1962	Zn-65	Trash, etc.	5
27 Jun 1962	Zn-65	Trash, etc.	6
27 Jun 1962	Zn-65	Trash, etc.	5

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TABLE 5.11 (Continued)
RADIOACTIVE WASTE INVENTORY IN LANDFILL 5
ENVIRONMENTAL BASELINE SURVEY
FITZSIMONS ARMY MEDICAL CENTER
AURORA, CO

Date of Disposal	Radioactive Isotope	Type of Material Buried	Activity (MicroCuries)
27 Jun 1962	Zn-65	Trash, etc.	5
27 Jun 1962	Zn-65	Trash, etc.	5
27 Jun 1962	Zn-65	Trash, etc.	5
27 Jun 1962	Zn-65	Trash, etc.	5
27 Jun 1962	I-131	Trash, etc.	8
27 Jun 1962	I-131	Trash, etc.	10
27 Jun 1962	I-131	Trash, etc.	4
27 Jun 1962	I-131	Trash, etc.	15
27 Jun 1962	I-131	Trash, etc.	5
27 Jun 1962	I-131	Trash, etc.	10
27 Jun 1962	I-131	Trash, etc.	7
27 Jun 1962	Zn-65	Rat Feces	10
27 Jun 1962	Zn-65	Rats	20
27 Jun 1962	Zn-65	Rats	20
27 Jun 1962	Zn-65	Rats	10
27 Jun 1962	Zn-65	Rats	20
27 Jun 1962	Zn-65	Rats	20

TABLE 5.11 (Continued)
RADIOACTIVE WASTE INVENTORY IN LANDFILL 5
ENVIRONMENTAL BASELINE SURVEY
FITZSIMONS ARMY MEDICAL CENTER
AURORA, CO

Date of Disposal	Radioactive Isotope	Type of Material Buried	Activity (MicroCuries)
27 Jun 1962	Zn-65	Rats	10
27 Jun 1962	Zn-65	Rats	20
27 Jun 1962	Zn-65	Rats	20
27 Jun 1962	I-131	Rats	15
27 Jun 1962	I-131	Rats	10
27 Jun 1962	H3	Rats	30
25 Jul 1962	I-131	Trash, etc.	5
25 Jul 1962	I-131	Trash, etc.	5
25 Jul 1962	I-131	Trash, etc.	5
25 Jul 1962	I-131	Trash, etc.	20
25 Jul 1962	I-131	Trash, etc.	10
25 Jul 1962	I-131	Trash, etc.	10
25 Jul 1962	I-131	Trash, etc.	10
25 Jul 1962	Au-198	Trash, etc.	10
25 Jul 1962	Au-198	Trash, etc.	5
25 Jul 1962	C-14	Trash, etc.	4
22 Aug 1962	I-131	Trash, etc.	5

TABLE 5.11 (Continued)
RADIOACTIVE WASTE INVENTORY IN LANDFILL 5
ENVIRONMENTAL BASELINE SURVEY
FITZSIMONS ARMY MEDICAL CENTER
AURORA, CO

Date of Disposal	Radioactive Isotope	Type of Material Buried	Activity (MicroCuries)
22 Aug 1962	I-131	Trash, etc.	5
22 Aug 1962	I-131	Trash, etc.	5
22 Aug 1962	I-131	Trash, etc.	5
22 Aug 1962	I-131	Trash, etc.	5
22 Aug 1962	I-131	Trash, etc.	5
22 Aug 1962	I-131	Trash, etc.	5
22 Aug 1962	I-131	Trash, etc.	5
22 Aug 1962	I-131	Trash, etc.	5
22 Aug 1962	I-131	Trash, etc.	5
22 Aug 1962	I-131	Trash, etc.	5
22 Aug 1962	I-131	Trash, etc.	5
22 Aug 1962	I-131	Bottles	10
26 Sep 1962	I-131	Trash, etc.	5
26 Sep 1962	I-131	Trash, etc.	5
26 Sep 1962	I-131	Trash, etc.	5
26 Sep 1962	I-131	Trash, etc.	5
26 Sep 1962	I-131	Trash, etc.	5

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TABLE 5.11 (Continued)
RADIOACTIVE WASTE INVENTORY IN LANDFILL 5
ENVIRONMENTAL BASELINE SURVEY
FITZSIMONS ARMY MEDICAL CENTER
AURORA, CO

Date of Disposal	Radioactive Isotope	Type of Material Buried	Activity (MicroCuries)
26 Sep 1962	I-131	Trash, etc.	5
26 Sep 1962	I-131	Trash, etc.	5
26 Sep 1962	I-131	Trash, etc.	5
26 Sep 1962	I-131	Trash, etc.	5
26 Sep 1962	I-131	Trash, etc.	5
26 Sep 1962	S-35	G. Pig Feces	12
26 Sep 1962	S-35	G. Pig Feces	12
26 Sep 1962	I-131	Rabbit	100
26 Sep 1962	C-14	Rat	100
26 Sep 1962	C-14	Rat	100
26 Sep 1962	C-14	Rat	100
26 Sep 1962	C-14	Rat	100
26 Sep 1962	C-14	Rat	100
26 Sep 1962	C-14	Rat	100
26 Sep 1962	I-131	Rat	50
26 Sep 1962	I-131	Rat	100
26 Sep 1962	I-131	Rat	100

TABLE 5.11 (Continued)
RADIOACTIVE WASTE INVENTORY IN LANDFILL 5
ENVIRONMENTAL BASELINE SURVEY
FITZSIMONS ARMY MEDICAL CENTER
AURORA, CO

Date of Disposal	Radioactive Isotope	Type of Material Buried	Activity (MicroCuries)
26 Sep 1962	I-131	Rat	100
24 Oct 1962	I-131	Trash, etc.	5
24 Oct 1962	I-131	Trash, etc.	5
24 Oct 1962	I-131	Trash, etc.	5
24 Oct 1962	I-131	Trash, etc.	5
24 Oct 1962	I-131	Trash, etc.	5
24 Oct 1962	I-131	Trash, etc.	5
24 Oct 1962	I-131	Trash, etc.	5
24 Oct 1962	I-131	Trash, etc.	5
24 Oct 1962	I-131	Trash, etc.	5
24 Oct 1962	I-131	Trash, etc.	5
24 Oct 1962	I-131	Trash, etc.	5
24 Oct 1962	I-131	Trash, etc.	5
24 Oct 1962	H3	Rats	700
24 Oct 1962	H3	Rats	700
24 Oct 1962	H3	Rats	700
24 Oct 1962	H3	Rats	700

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TABLE 5.11 (Continued)
RADIOACTIVE WASTE INVENTORY IN LANDFILL 5
ENVIRONMENTAL BASELINE SURVEY
FITZSIMONS ARMY MEDICAL CENTER
AURORA, CO

Date of Disposal	Radioactive Isotope	Type of Material Buried	Activity (MicroCuries)
24 Oct 1962	S-35	G. Pig Feces	285
24 Oct 1962	Food Irradiated w/spent fuel rods	Chicken	Background
24 Oct 1962		Carrots	Background
24 Oct 1962		Milk	Background
24 Oct 1962		Pork	Background
24 Oct 1962	S-35	G. Pig Carcasses	425
24 Oct 1962	Gamma Emitters	Filter	Background

5.2.7.9 Real Property Records

Real property records were provided by the Real Property Branch of DPW. These records were useful in providing an accountability of real property owned and leased by the federal government, date of construction, design basis of the buildings, and operations conducted in the buildings. Please refer to Table 3.1 for information collected from the real property records.

5.3 ELECTRONIC ENVIRONMENTAL RECORDS SEARCH

An electronic search was performed to identify those properties surrounding FAMC that are present in federal and state environmental public records, including:

- EPA RCRA Generators/TSD facilities;
- RCRA violators;
- RCRA enforcements;
- RAATS enforcements;
- CERCLA/NPL;
- NPL County Sites;
- TRI;
- FINDS;
- ERNS;
- Civil Enforcement Docket;
- NFA CERCLA Sites;
- UST Locations;
- Leaking Tank Locations;
- Solid Waste Facilities; and
- Old Waste Sites.

The above lists did not provide information concerning FAMC or the properties adjacent to FAMC, other than what was provided by the regulatory agencies, with the exception that FAMC was formerly on the CERCLIS list, but has since been removed. The report on the electronic record search is provided in Appendix D.

5.4 INTERVIEWS AND VISUAL INSPECTIONS

Interviews and visual inspections were conducted at FAMC as described in Section 2. The completed interview and inspection forms are presented in Appendices E and F, respectively. More than 75 current and former employees were interviewed, and approximately 49 areas and buildings at FAMC were inspected.

Properties adjacent to FAMC were visually inspected by automobile survey. The majority of the properties in the area surrounding FAMC include businesses along the East Colfax Avenue, Peoria Street, and Potomac Street corridors. East Colfax Avenue borders FAMC to the south, Peoria Street borders FAMC to the west, and Potomac Street borders FAMC to the east. Sand Creek Park, Sand Creek, and a vacant open space border FAMC on the north side; Tollgate Creek borders FAMC on the east side. Located farther to the east from Tollgate Creek is a mobile home park and private residences. Those businesses located along the East Colfax Avenue, Peoria Street, and Potomac Street corridors adjacent to FAMC are presented in Table 5.12. The majority

TABLE 5.12
CURRENT BUSINESSES ADJACENT TO FAMC
ENVIRONMENTAL BASELINE SURVEY
FITZSIMONS ARMY MEDICAL CENTER
AURORA, COLORADO

Number	Street	Business	Use
1521	Peoria Street	Window Tinting	Maintenance
1527	Peoria Street	Grease Monkey®	Car Maintenance
1533-1593	Peoria Street	Peoria Plaza	Commercial
1685	Peoria Street	New Dragon Restaurant	Restaurant
1695	Peoria Street	Bakery Thrift Shop	Commercial
1747	Peoria Street	Harmony Apartments	Residential
1795	Peoria Street	7-11 Gasoline Station	Gasoline Station
1901	Peoria Street	Office Building	Administrative
1945	Peoria Street	Amber Ridge Apartments	Residential
2499	Peoria Street	Chiropractic Office Building	Administrative
12085	East Colfax Avenue	Conoco Gasoline Station	Gasoline Station
12200	East Colfax Avenue	Big Sur Waterbeds	Commercial
12100	East Colfax Avenue	Fitzsimons Shopette	Restaurant
12332	East Colfax Avenue	Baptist Church	Church
12350	East Colfax Avenue	Office Building	Administrative
12370	East Colfax Avenue	Laundromat	Commercial
12372	East Colfax Avenue	Double C Cleaners	Commercial
12382	East Colfax Avenue	Peoria Restaurant	Restaurant
	East Colfax Avenue	ABC Storage	Commercial
12390	East Colfax Avenue	Melody Lodge Motel	Residential
12500	East Colfax Avenue	Blue Spruce Motel	Residential
12600	East Colfax Avenue	Woo Rae Restaurant	Restaurant
12700	East Colfax Avenue	Manor House Motel	Residential
12796	East Colfax Avenue	Total Gasoline Station	Gasoline Station
12800	East Colfax Avenue	East Drive-in Theater	Commercial
12900	East Colfax Avenue	Capri Vista Mobile Home Park	Residential
13000	East Colfax Avenue	Dunes Motel	Residential
13130	East Colfax Avenue	TREA-39	Commercial
	East Colfax Avenue	4-U Lounge	Restaurant
13250	East Colfax Avenue	Bel-Air Motel	Residential
13280	East Colfax Avenue	Family Motel	Residential
13388	East Colfax Avenue	Sands Motel	Residential
13400	East Colfax Avenue	Satellite Shop	Commercial
13490	East Colfax Avenue	Weekly Motor Inn	Residential
13500	East Colfax Avenue	Wee Pals Child Care	Commercial
13550	East Colfax Avenue	MEGGS Mobile Homes Sales	Commercial
13600	East Colfax Avenue	Aurora Bowl	Commercial
13650	East Colfax Avenue	Heaven on Earth Inn	Residential
13690	East Colfax Avenue	Conoco Gasoline station	Gasoline Station
13700	East Colfax Avenue	Hugh M. Woods	Commercial
13750	East Colfax Avenue	Sinclair Gasoline Station	Gasoline Station
13721	East Colfax Avenue	U-Haul	Commercial
	Potomac Street	Residence	Residential
	Potomac Street	Storage	Commercial

of the businesses are commercial, residential (including motels), gasoline stations, and restaurants. The commercial businesses that were identified as potentially storing hazardous substances included Window Tinting, Grease Monkey®, Laundromat, Double "C" Cleaners, Satellite Shop, and Hugh M. Woods. All gasoline stations were identified as storing petroleum products. These businesses were not inspected because no obvious concerns were identified via the automobile survey.

5.5 AERIAL PHOTOGRAPH ANALYSIS

An analysis of aerial photographs was conducted for FAMC and surrounding properties to determine past practices which may have caused environmental releases, as described in Section 2. The dates of the photographs, the frame numbers, and a description of the photographs are presented in Table 5.13. Years for which photographs were not available are noted.

Approximate scale of the aerial photographs varied from high altitude (1"=4,000') to low altitude (1"=200'). Selected photographs depicting ground disturbance or other notable features have been reproduced and are presented in Appendix G.

5.6 TITLE DOCUMENTS

A review of the chain-of-title documents for FAMC was conducted to gain an understanding of historical ownership and easements issued for FAMC property.

A review of the title documents indicated that FAMC was formerly the property known as Gutheil Park. The title search revealed that several individuals owned blocks within Gutheil Park prior to transferring them to the Denver Civic and Commercial Association in 1918. Incorporation documentation for the Denver Civic and Commercial Association was also present in the title search. The majority of Gutheil Park property was owned by the Gutheil family.

A deed was issued 28 March 1918 from Lilla Gutheil to the Denver Civic and Commercial Association for the northwest quarter of the northwest quarter, and the west half of the southwest quarter of Section 36, Township 3 South, Range 67 West, including 120 acres, more or less, with water rights for 100 acres from the Northern Colorado Irrigation Company, including water in and from the nursery seepage and waste ditch.

Several other deeds were issued from individuals releasing property and water rights to the Denver Civic and Commercial Association. These individuals included Benjamin M. Marsh, Lucile Goddard Hewitt, Harriet Humphreys, William Gibbs Bailey, Charles Hayden, George Manly, A.J. Pale, Mike Durr, Mary Lovett, and William Fisk. A lease dated 19 April 1918 was signed between the Denver Civic and Commercial Association and Colonel Coleman of the U.S. Army, as a site for a recuperation camp and tuberculosis hospital at the rate of one dollar per year. The plat map of the property was provided in the title search.

The property leased to the U.S. Army included all of Section 36, Township 3 South, Range 67 West, except the northeast quarter of the northeast quarter of said section,

TABLE 5.13
AERIAL PHOTOGRAPH INTERPRETATION
ENVIRONMENTAL BASELINE SURVEY
FITZSIMONS ARMY MEDICAL CENTER
AURORA, CO

Date of Photograph	Frame Numbers	Interpretation
1948 (10/21/48)	88, 89, 90, and 91	These photographs depict an irrigation canal trending from the center of Montview Avenue to the golf course. Presumably, water was used for golf course irrigation. Some excavating is indicated at Landfill 2 west of the WWTP and some unidentifiable items are stacked on the ground. This photo shows the original two water towers with the smaller of the two located just west of the larger one. Adjacent properties all appear to be agricultural or residential.
1949 (6/20/49)	054	One photograph available with no disturbances detected.
1950 (4/20/50)	DV19-057, -058, and -059	Two trenches are visible near the WWTP. One is located in the northeast corner of WWTP, Landfill 2, and the other appears west of the large circular filtration bed, Landfill 1.
1951 (3/25/51)	DV29-21, -22, -23, -195, -196, and -198	This photo shows the old main gate located at the corner of Colfax Avenue and Peoria Street. No disturbances are noted.
1952 (5/28/52)	43-163, and -164	Trenches are visible west of the WWTP, Landfill 1. The road from Colfax Avenue to the hospital entrance is shown under construction.
1953 (3/7/53)	48-159 and -160	Trenches are visible west of the WWTP, Landfill 1. No other disturbances noted.
1954 (4/16/54)	56-89, -90, and -91	No disturbances noted.
1955 (5/11/55)	64-14, 15 and 16	Two trenches are visible near the WWTP. One is located on the east side, Landfill 2, and one on the west side of the facility, Landfill 1.
1956 (4/21/56)	77-76, -77	Trenches near the WWTP are noted. A feature located at the eastern edge of facility may be an ash pile, Landfill 4. No other items were observed.
1957 (8/11/57)		Trenches are visible on both sides of the WWTP, Landfills 1 and 2.

TABLE 5.13 (Continued)
AERIAL PHOTOGRAPH INTERPRETATION
ENVIRONMENTAL BASELINE SURVEY
FITZSIMONS ARMY MEDICAL CENTER
AURORA, CO

Date of Photograph	Frame Numbers	Interpretation
1958 (8/8/58)	91-148, -189, -190	Trenches are located on the west and east sides of the WWTP, Landfills 1 and 2.
1959 (7/10/59)	106-164, -165	Trenches are visible west of the WWTP, Landfill 1, and "covered" trenches are visible east of the plant, Landfill 2.
1960 (8/31/60)	130, 131, and 132	Land disturbed at the southeast corner of FAMC property near the reserve training area appears to be grading for construction. Additional development is apparent offsite on Colfax Avenue. Only one water tower is visible in this photograph. The small tower appears to have been removed by the time this photograph was taken.
1961		No photographs were available.
1962 (2/11/62)	1560 1-2,1-3, 2-1, and 2-3	Frames 2-1 and 2-2 show a ditch behind the incinerator at the east Base boundary that drains to Tollgate Creek.
1963		No photographs were available.
1964		No photographs were available.
1965 (4/29/65)	120-129 and -130	Trenching on the east side of the WWTP is indicated, Landfill 2. Previous trenching at the area west of the plant has been restored, Landfill 1. There are now only two structures in the area around the east incinerator (four structures are visible in the photograph from 1959).
1966		No photographs were available.
1967 (7/1/67)	128-24 and -25	Trenches are identified on the east side of the WWTP, Landfill 2. No other visible disturbances are noted.
1968 (4/1/68)	129, 286, 287, 288, 312 and 313	This photograph shows additional trenches installed at a landfill near the WWTP, Landfill 2.

TABLE 5.13 (Continued)
AERIAL PHOTOGRAPH INTERPRETATION
ENVIRONMENTAL BASELINE SURVEY
FITZSIMONS ARMY MEDICAL CENTER
AURORA, CO

Date of Photograph	Frame Numbers	Interpretation
1969 (12/1/69)	2-1 and one additional unmarked photo	Landfill excavation is filled in with light-colored bags, Landfill 2.
1970 (4/25/70)	132-350, -364, and -366	One trench is noted east of the WWTP, Landfill 2 (same trench as noted in the 1965 photos). Ditch north and east of incinerator shows drainage to creek. Some discoloration shows around railroad tracks east of Building No. 213.
1971 (3/30/71)	134-362, -363, -379 and -380	No new trenches are visible - no other disturbances are noted.
1972 (5/15/72)	135-529, -530, -497 and -498	Trenches are noted at Landfill 2 near the WWTP. No other features are noted.
1973 (5/31/73)	137-253,-254	Scale too small to observe detail.
1974 (11/7/74)	140-54,-55, -402,-437,-438	Area west of WWTP shows re-vegetation, Landfill 1. Three trenches are noted east of the WWTP, Landfill 2. The ditch north of the incinerator has been filled in. This trench used to show drainage to creek.
1975		No photograph is available.
1976 (10/8/76)	144-90,-91	Scale too small to observe detail.
1977 (7/31/77)	14-20, -21	Scale too small to observe detail.
1978 (6/9/78)	147-12, -13 and (10/15/78) Frames 148-76, -77	Scale too small to observe detail.
1979 (5/11/79)	183,-184,-185 (10/26/79) Frames 143 and 144	No disturbances noted.
1980 (6/4/80)	21,22 and (10/19/80) Frames 80,87,88	Scale too small to observe detail.

TABLE 5.13 (Continued)
AERIAL PHOTOGRAPH INTERPRETATION
ENVIRONMENTAL BASELINE SURVEY
FITZSIMONS ARMY MEDICAL CENTER
AURORA, CO

Date of Photograph	Frame Numbers	Interpretation
1981 (10/19/95)	252, 253	Small excavation is visible east of WWTP, Landfill 2; otherwise no disturbances noted.
1982 (8/16/82)	43, 44	No new disturbances are noted. Storage yard east of Building No. 249 contains unknown items.
1983 (10/5/83)	210, 211	Scale too small to observe detail.
1984 (11/18/84)	170, 171	Nothing observed.
1985 (10/05/85)	176, 177	Nothing observed.
1986 (10/7/86)	185, 186	Excavation noted east of golf course and west of WWTP, Landfill 1.
1987 (10/1/87)	115, 116	Scale too small to observe detail.
1988 (4/11/88)	82, 83	Scale too small to observe detail.
1989 (4/18/89)	10, 11	Scale too small to observe detail.
1990 (10/23/90)	130,131,196,197	Trenches east of WWTP appear to be filled in, Landfill 2. Scale is small - detail is minimal.
1991 (10/2/91)	272, 273	Storage of what appear to be drums at landfill east of WWTP, Landfill 2.
1992 (9/28/92)	37, 38	Nothing observed.
1992 (10/2/92)	142	What appears to be surficial staining or drum storage at the landfill east of the WWTP, Landfill 2.
1993 (11/9/93)	96	Staining, drum storage at landfill east of WWTP, Landfill 2.
1994 (10/10/94)	375,376	Excavation for power plant observable. Piling of construction material at landfill east of golf course, Landfill 1. No other items detected.
1995 (7/7/95)	163,164	Construction debris and excavation for power plant is visible. Construction trailers over landfill trenches, Landfill 2. No other observable disturbances.

and except also a rectangular strip of land in the southeast quarter of the northeast quarter of said section beginning at the northeast corner thereof and being 225 feet wide and extending 1,000 feet south, and the eastern boundary line of said rectangular strip being the eastern boundary line of said Section 36, together with all water, ditch and irrigation rights pertaining to the lands hereby described. Amendments to the lease were recorded 20 August 1929 and 21 September 1950.

Numerous easements were recorded in the title documents. These easements were primarily for road and highway upgrades, drainage improvements, and lighting. Those easements affecting roads and streets surrounding FAMC were dated 17 August 1967, 2 October 1972, 18 September 1975, and 30 March 1986. An easement was issued for a right-of-way for Tollgate Creek improvements on 1 October 1986. An easement for electrical street lights on the northwest portion of FAMC was issued 11 August 1994. The Record of Environmental Consideration completed for this easement indicated that no specific or unusual environmental concerns were identified that would significantly affect anyone using this area.

SECTION 6

PROPERTY CATEGORIZATION

The findings of this investigation presented in Section 5 have been reorganized by geographic location and category in this section. Because of the variety of activities, uses, and environmental history at FAMC, the property was subdivided into parcels with similar environmental conditions. This in turn allows a more logical and cost-effective approach to determining the suitability for future use, schedule for property transfer, and need for additional environmental investigation.

Each building or area of grounds at FAMC has been classified into seven categories as defined in the *BRAC Cleanup Plan Guidebook* (DoD, 1993), which addresses CERCLA environmental issues. CERCLA environmental issues include the storage, release, or disposal of hazardous substances and petroleum products. The buildings and grounds were then grouped together by category to form contiguous parcels with similar environmental conditions for consideration for transfer or further action.

The seven property categories are described as follows:

- **Category 1 - Areas where no storage, release, or disposal (including migration) has occurred.** A geographically contiguous and mappable area where the results of the EBS investigation showed that no hazardous substances or petroleum products were stored, released into the environment or site structures, or disposed. If information gathered from the EBS indicated that hazardous substances or petroleum products had been released, disposed, or stored in the area, the geographic location was not identified as Category 1.

- **Category 2 - Areas where only storage has occurred.** A geographically contiguous and mappable area where the results of the EBS investigation showed that storage of hazardous substances or petroleum products had occurred.

- **Category 3 - Areas of contamination below action levels.** A geographically contiguous and mappable area where environmental evidence demonstrated that hazardous substances or petroleum products had been stored, released, or disposed, but were present in quantities that required no response action to protect human health and the environment. Such quantities of hazardous substances or petroleum products may be below defensible detection limits, or may be above detection limits but below action levels, as defined in the *BRAC Cleanup Plan Guidebook* (DoD, 1993).

- **Category 4 - Areas where all remedial action has been taken.** A geographically contiguous and mappable area where all remedial actions necessary to protect human health and the environment have been taken. Category 4 areas include those areas in which the EBS documented evidence that hazardous substances were known to have been released or disposed, but all remedial actions necessary to protect human health and the environment with respect to any hazardous substances remaining on the property were taken to meet the provisions of CERCLA 120(h)(3).

- **Category 5 - Areas of known contamination with removal and/or remedial action under way.** A geographically contiguous and mappable area where the presence of sources or releases of hazardous substances or petroleum products (including derivatives) were confirmed based on the results of sampling and analysis in electronic databases and/or environmental restoration and compliance reports. By definition, areas within this category contain contaminant concentrations above action levels. Remedial systems for Category 5 areas are partially or entirely in place, but have not been fully demonstrated.

- **Category 6 - Areas of known contamination where required response actions have not yet been implemented.** A geographically contiguous and mappable area where the presence of sources or releases of hazardous substances or petroleum products (including derivatives) were confirmed based on the results of sampling and analysis as contained in electronic databases and/or environmental restoration and compliance reports. This area type contains concentrations of contaminants above action levels. Additionally, required remedial systems have not been selected or implemented.

- **Category 7 - Areas that are unevaluated or that require further evaluation.** A geographically contiguous and mappable area where the presence of sources or releases of hazardous substances or petroleum products (including derivatives) is suspected, but not well characterized, based on the results of the EBS investigation. They do not, with certainty, fit any of the previous area types because evaluation efforts have not occurred, are ongoing, or are inconclusive. In addition, all buildings which currently or formerly used radiological materials are identified as Category 7.

More detailed information regarding the definition of the seven categories may be found in the *BRAC Cleanup Plan Guidebook* (DoD, 1993).

The current environmental condition of FAMC buildings and grounds with respect to the seven categories is presented in Figure 6.1. Buildings that were identified as Categories 1 through 4, but located within an area that may have contamination in the soil or groundwater, were identified as a Category 7. Figure 6.2 presents sites of environmental concern, including USTs, ASTs, oil/water separators, incinerators, spills, lagoons, and landfills, that were used in addition to other information gathered during the EBS investigation to determine the above-referenced categories.

Property identified as Categories 1 through 4 (excluding those buildings used to store radioactive substances or waste) are eligible for deed transfer. Property in Categories 5 through 7 cannot be considered for transfer until all necessary actions have been taken to

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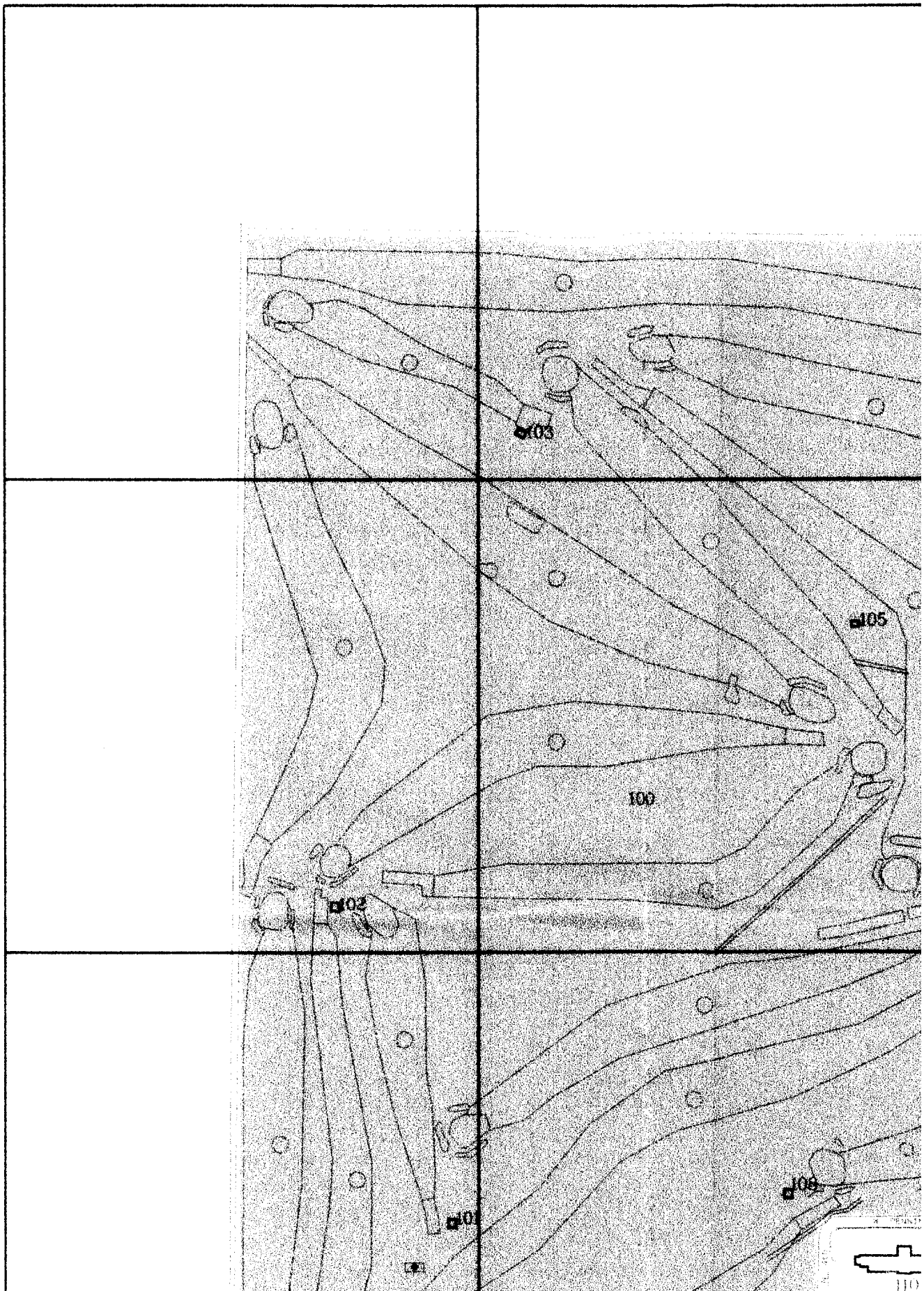

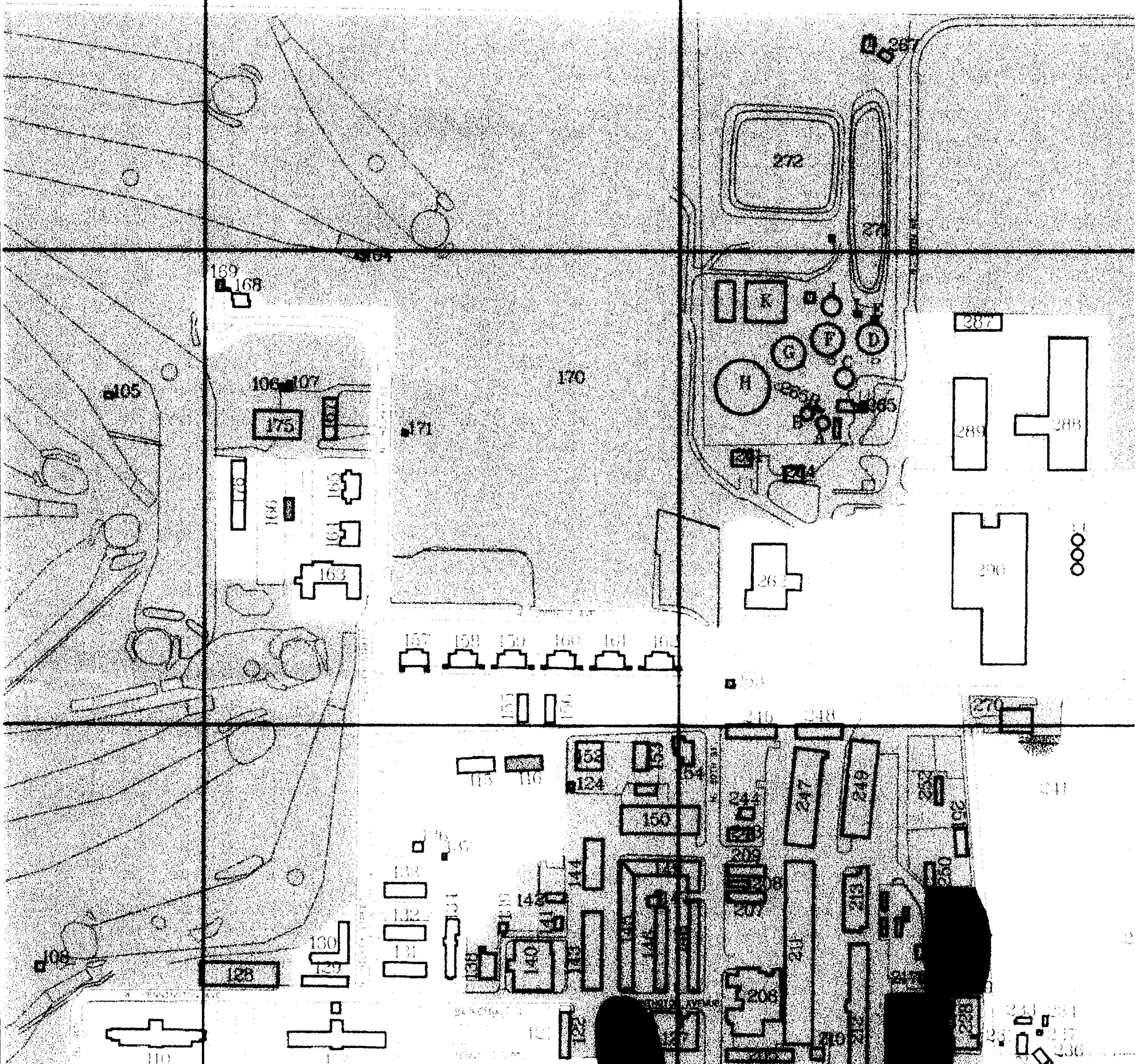

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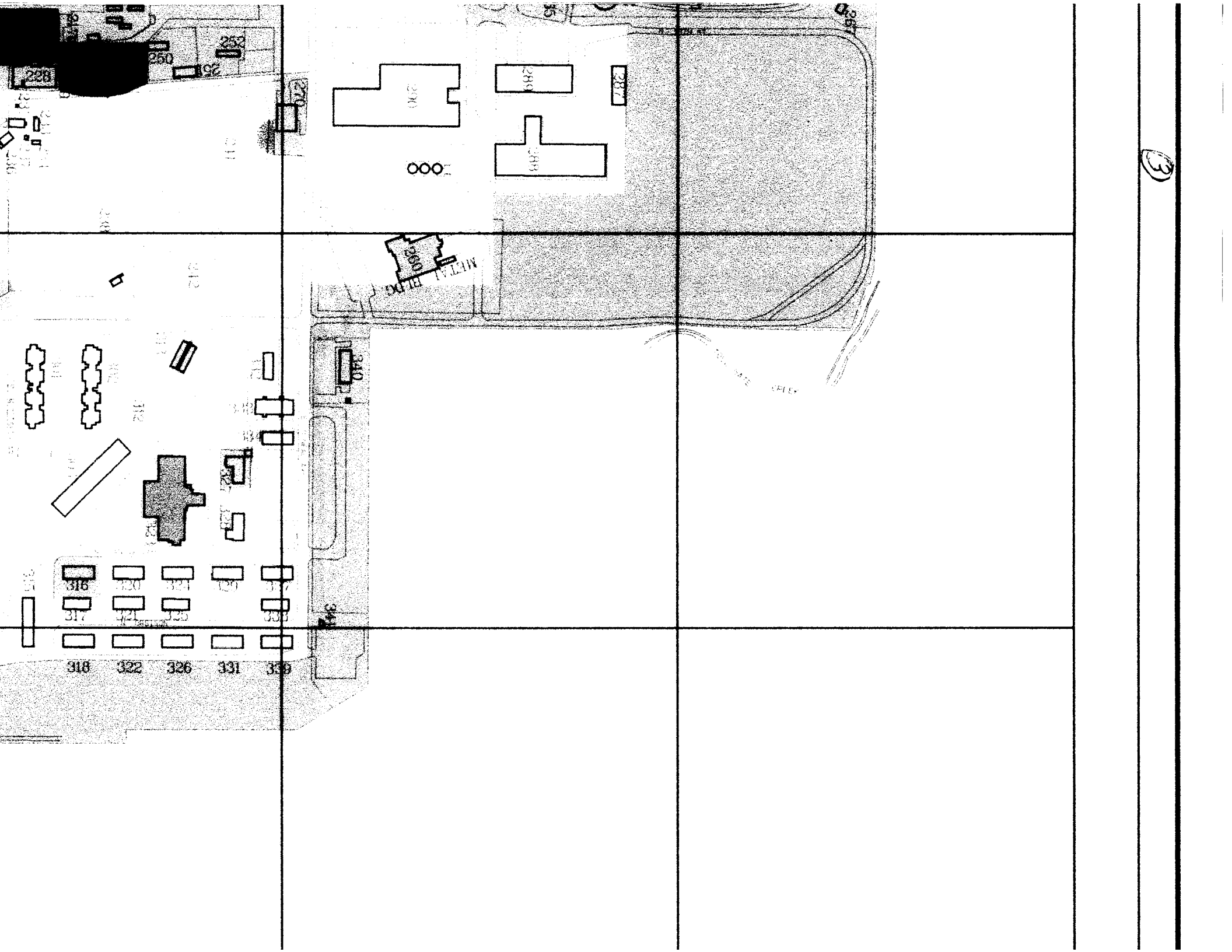
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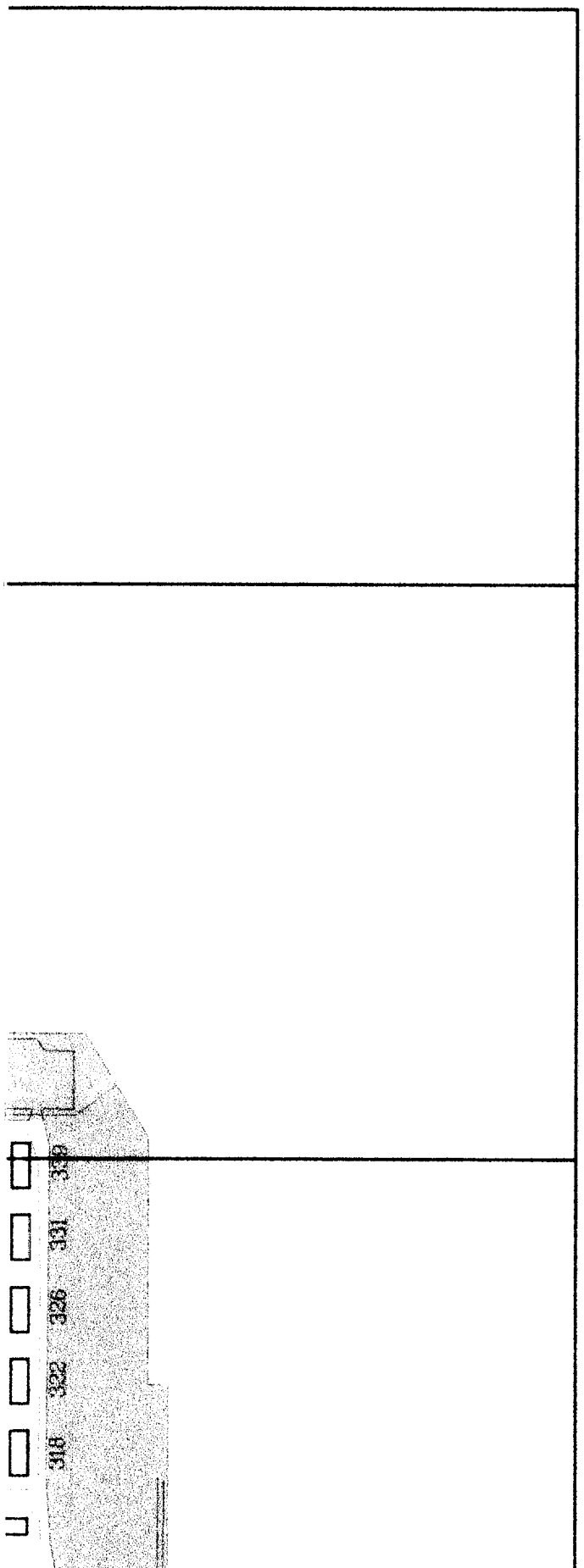

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Category 7- A

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Legend

ıtegory 1- Areas where no storage, release or disposal
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ıcluding no migration of these substances from adjacent
eas).

ıtegory 2- Areas where only storage of hazardous substances
petroleum products has occurred (but no release, disposal,
migration from adjacent areas has occurred).

ıtegory 3- Areas where storage, release, disposal, and/or
gration of hazardous substances or petroleum products
s occurred, but at concentrations that do not require a
moval or remedial action.

ıtegory 4- Areas where storage, release, disposal,
d/or migration of hazardous substances or petroleum
oducts has occurred, and all remedial actions necessary
protect human health and the environment have been taken.

ıtegory 5- Areas where storage, release, disposal, and/or
gration of hazardous substances or petroleum products
ve occurred, removal and/or remedial actions are under
ıy, but all required remedial actions have not yet been
ken.

ıtegory 6- Areas where storage, release, disposal, and/or
gration of hazardous substances or petroleum products has
curred, but required response actions have not yet been
plemented.

ıtegory 7- Areas that are unevaluated or require additional

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storage, release or disposal
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y storage of hazardous substances
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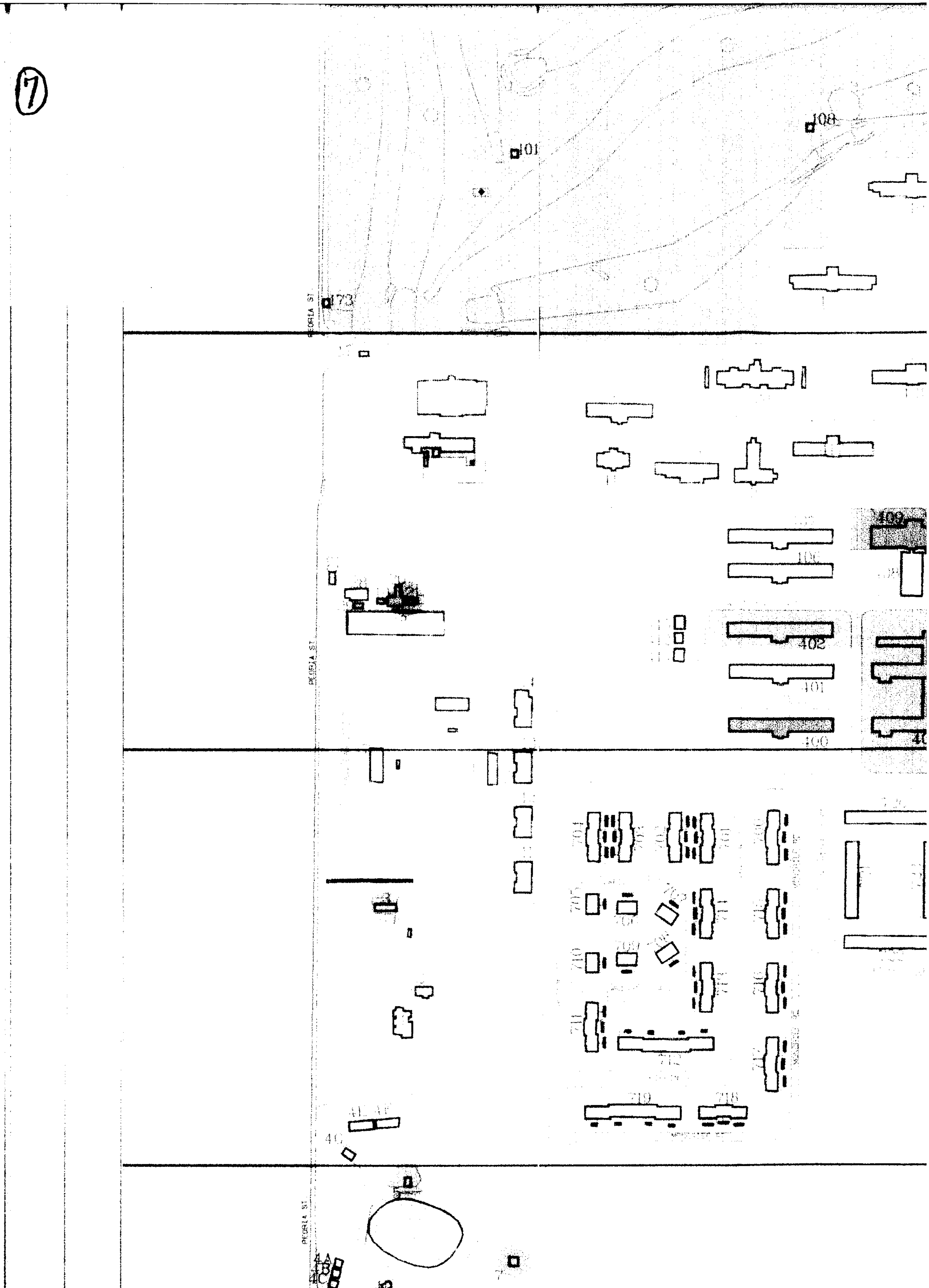
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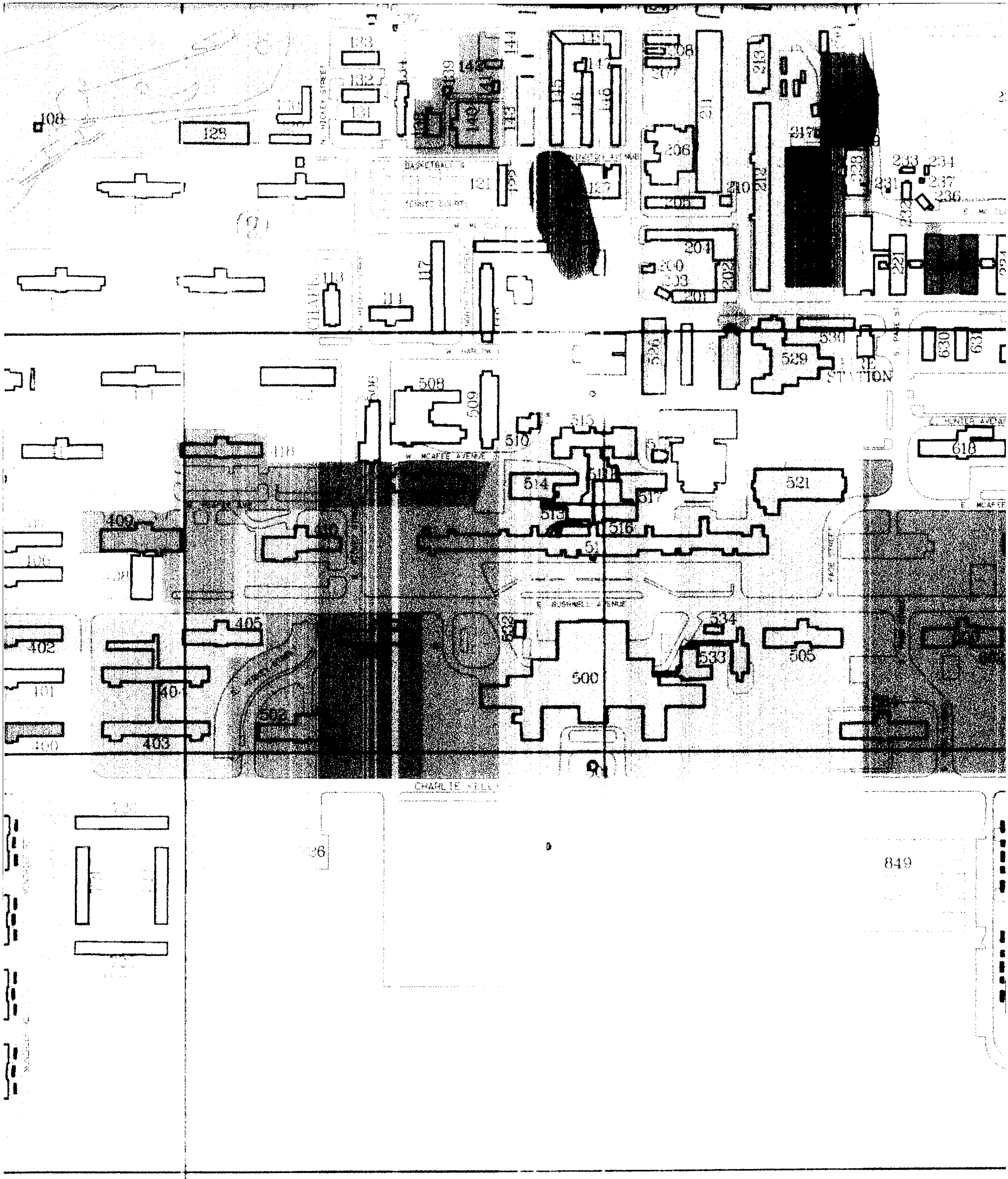

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E. BUSHNELL AVENUE
E. HUNTER AVENUE
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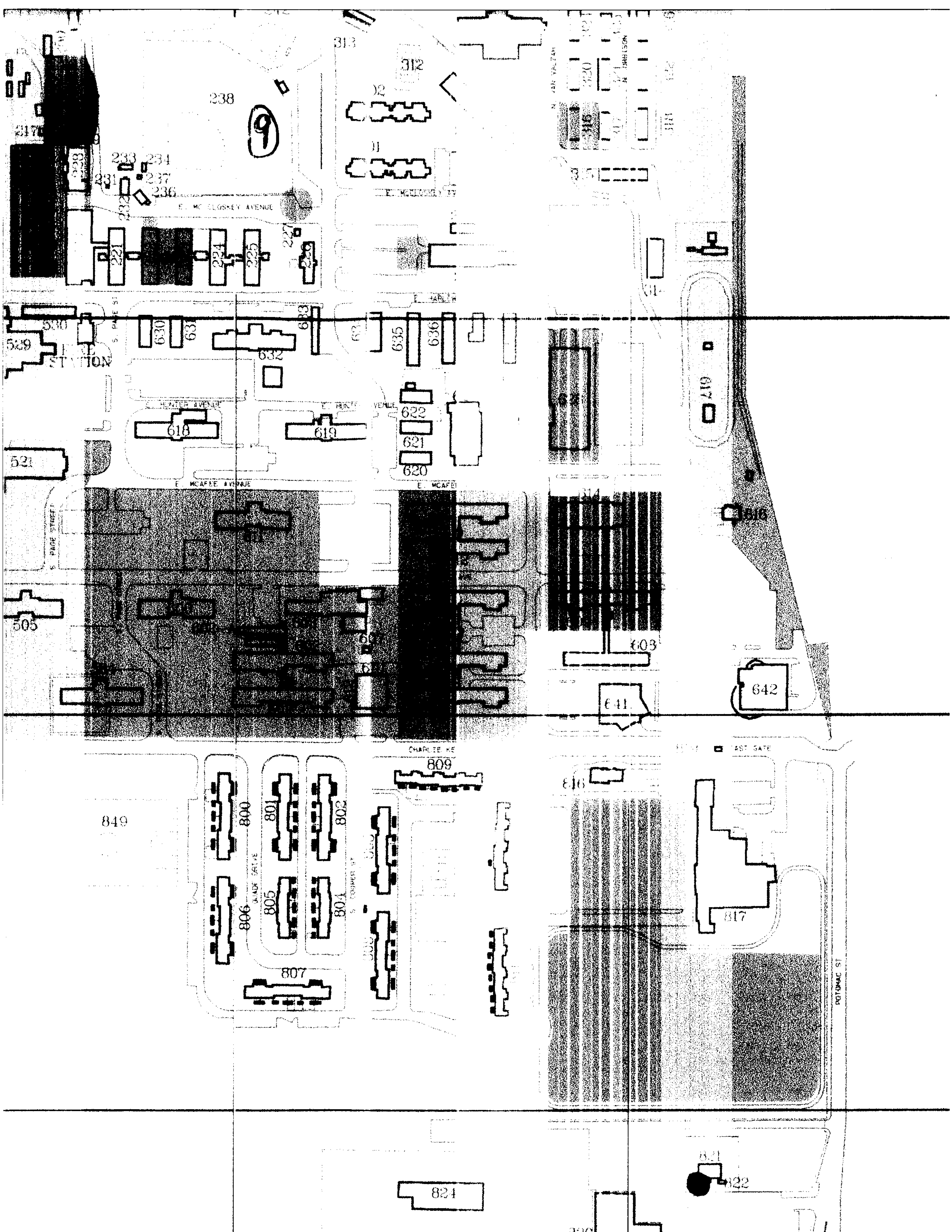

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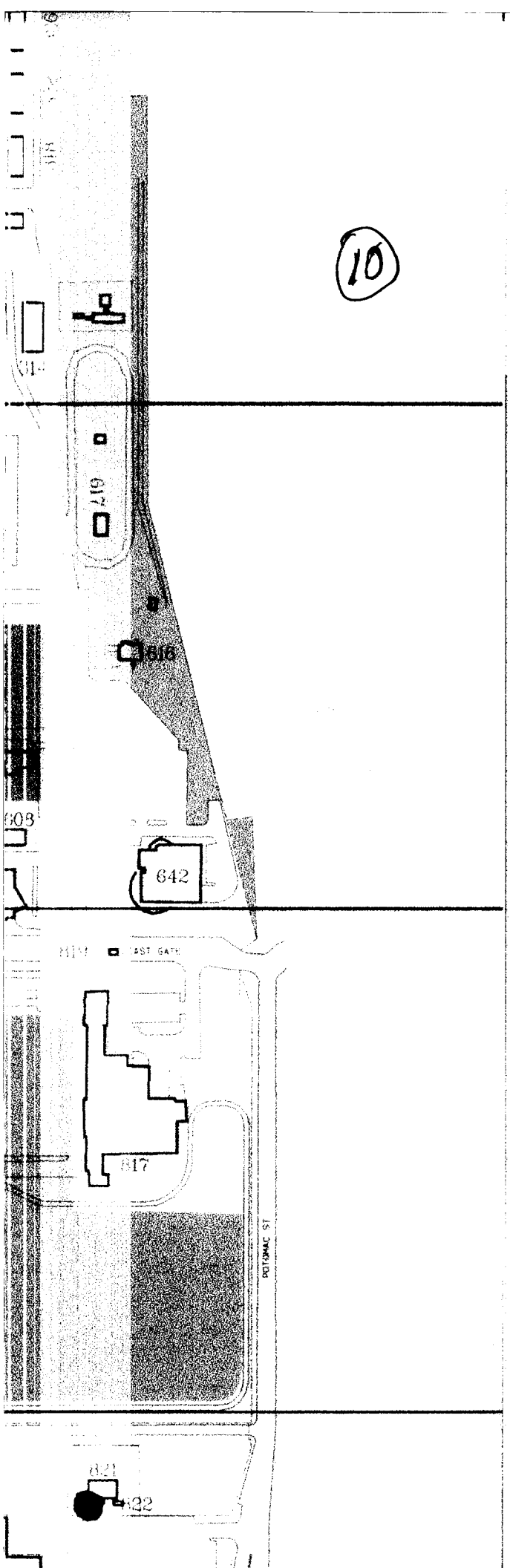

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tegory 6- Areas where storage, release, disposal, and/or gration of hazardous substances or petroleum products has curred, but required response actions have not yet been plemented.

tegory 7- Areas that are unevaluated or require additional aluation.

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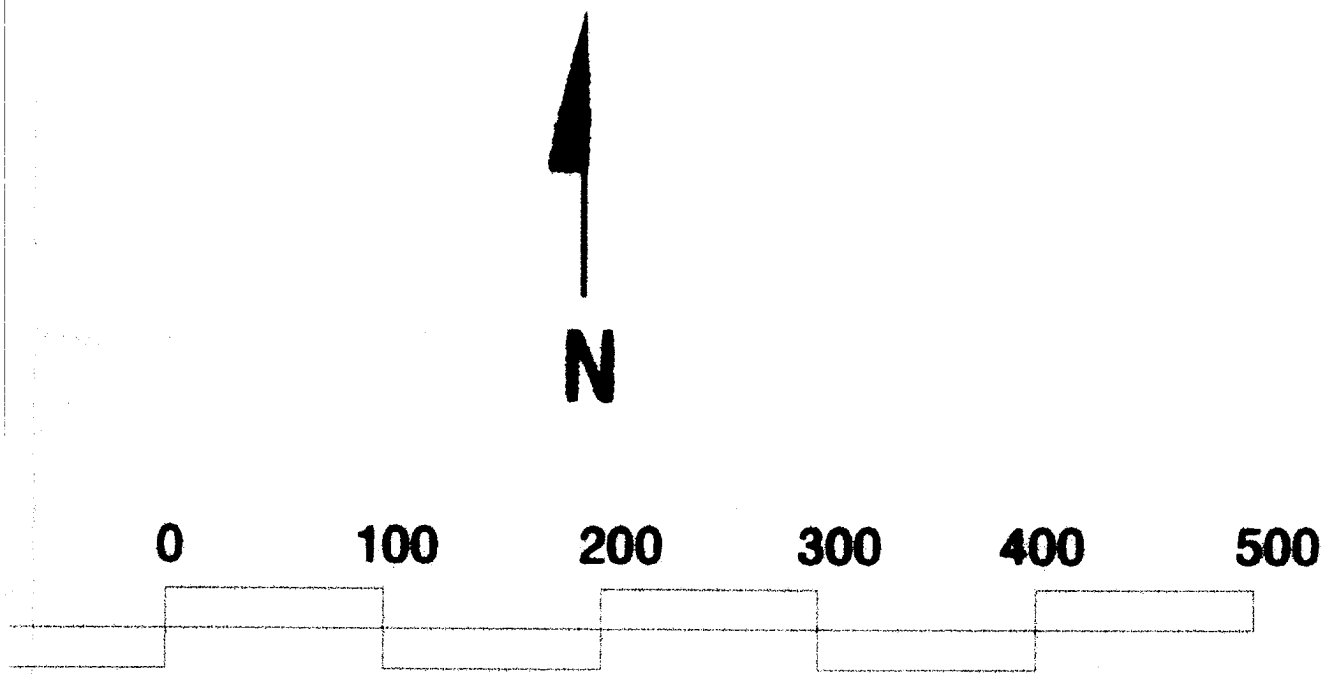

SCALE IN METERS

REVISION	DATE	DESCRIPTION	B
A	1/96	Draft Environmental Baseline Survey	JJ
B	4/96	Draft Environmental Baseline Survey	JJ
C	6/96	Final Environmental Baseline Survey	JJ

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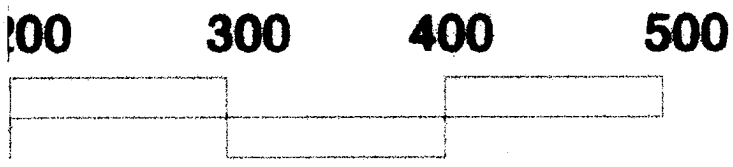

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1/96	Draft Environmental Baseline Survey	JJ
4/96	Draft Environmental Baseline Survey	JJ
5/96	Final Environmental Baseline Survey	JJ

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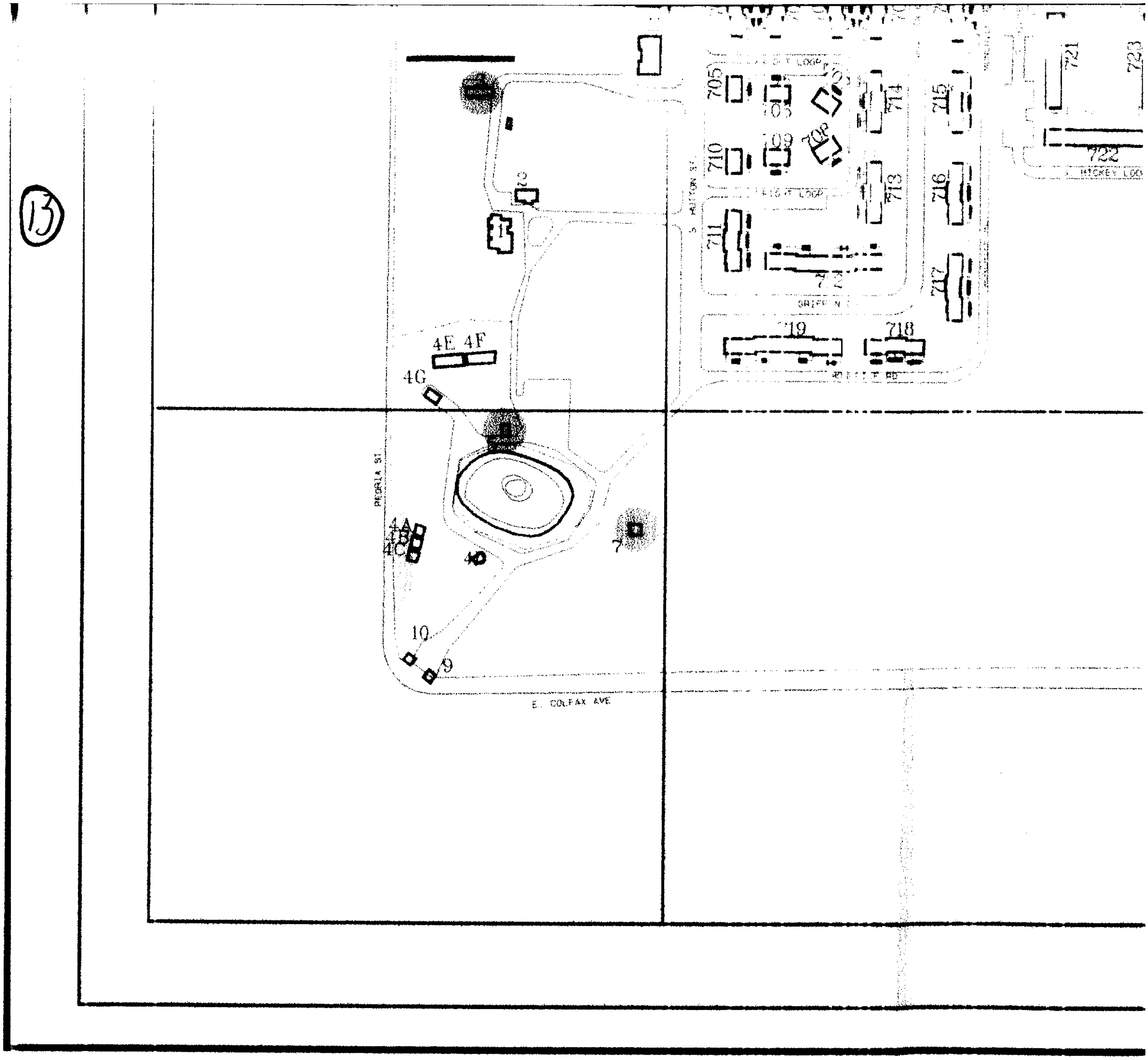

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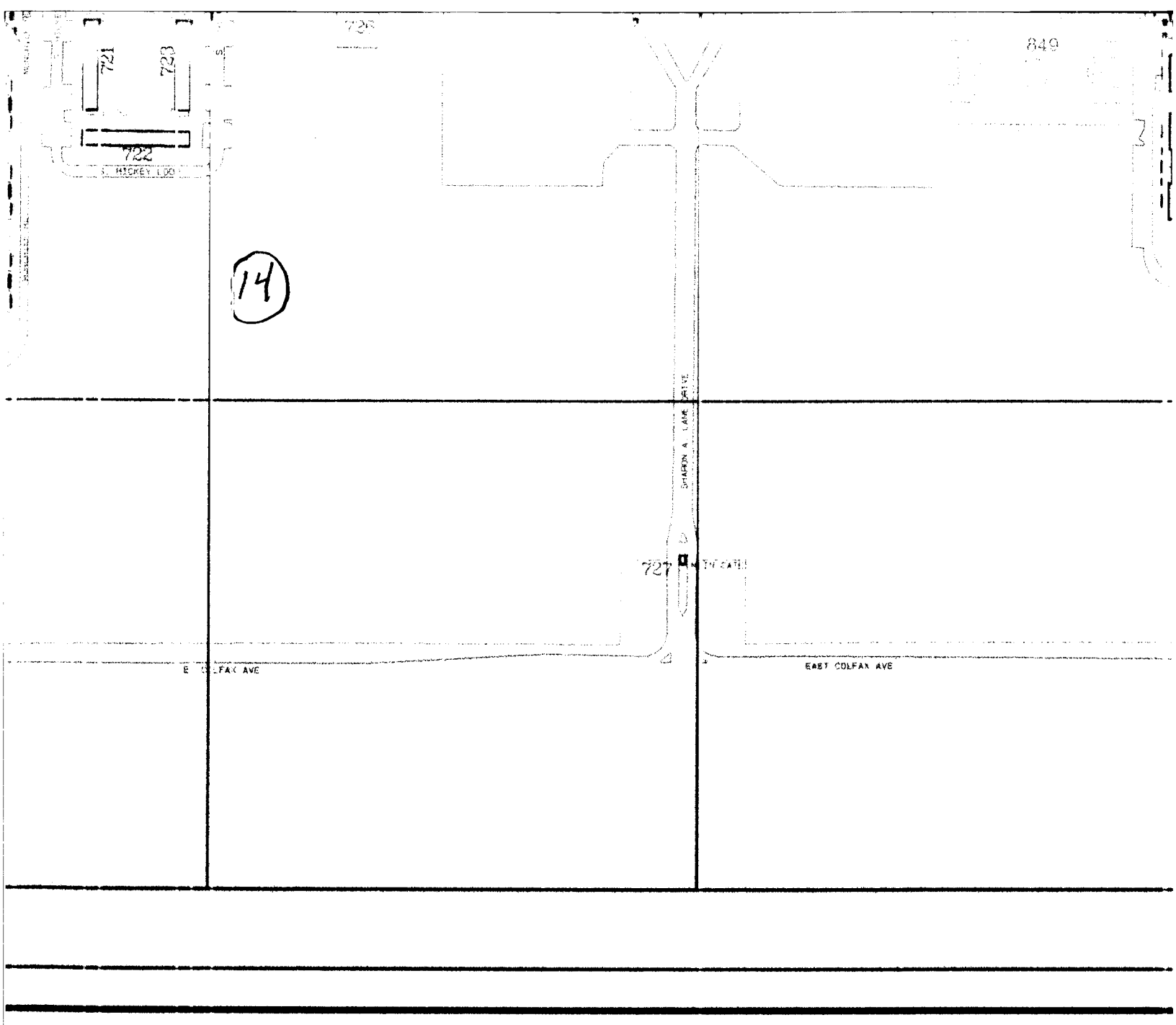
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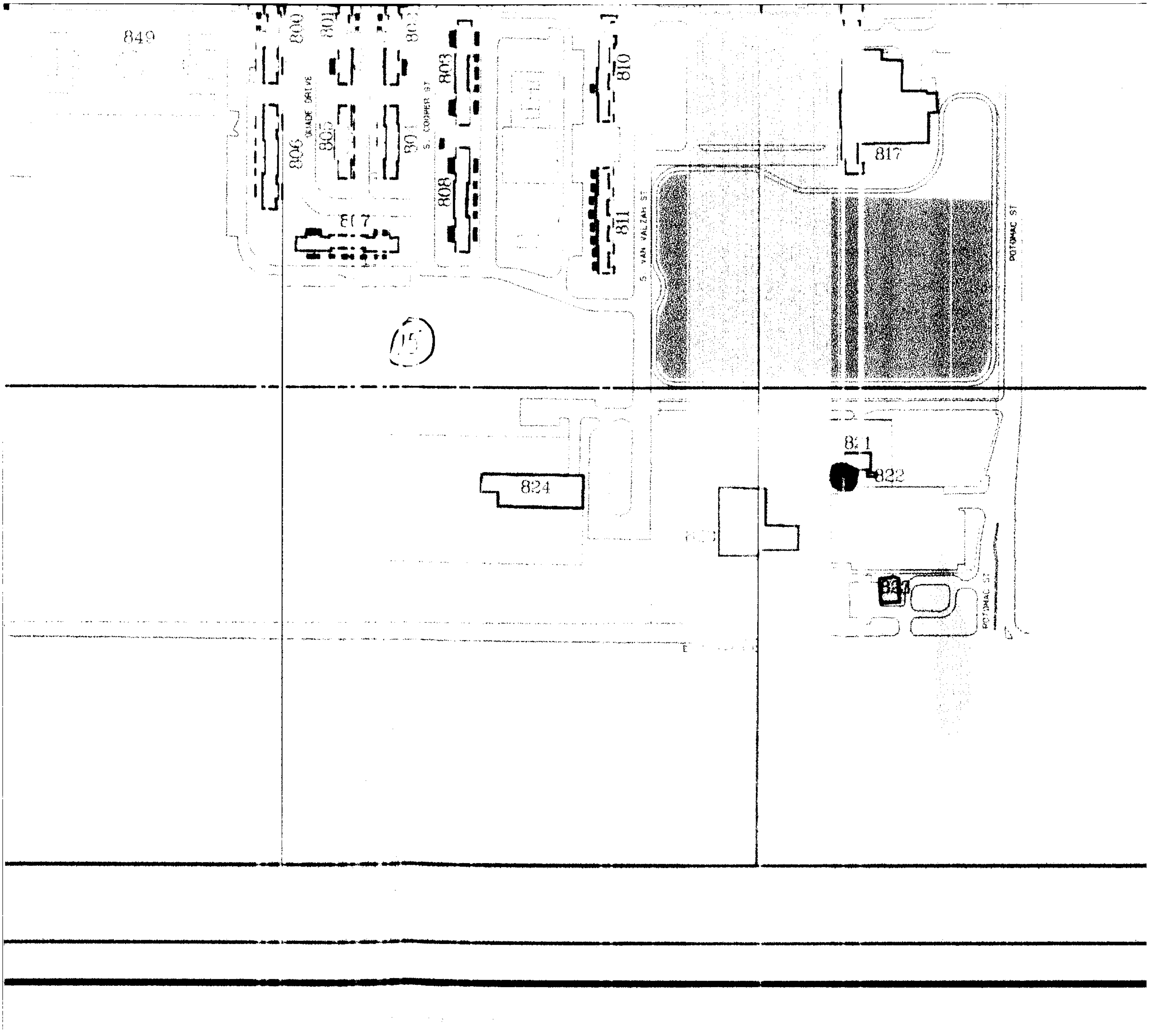
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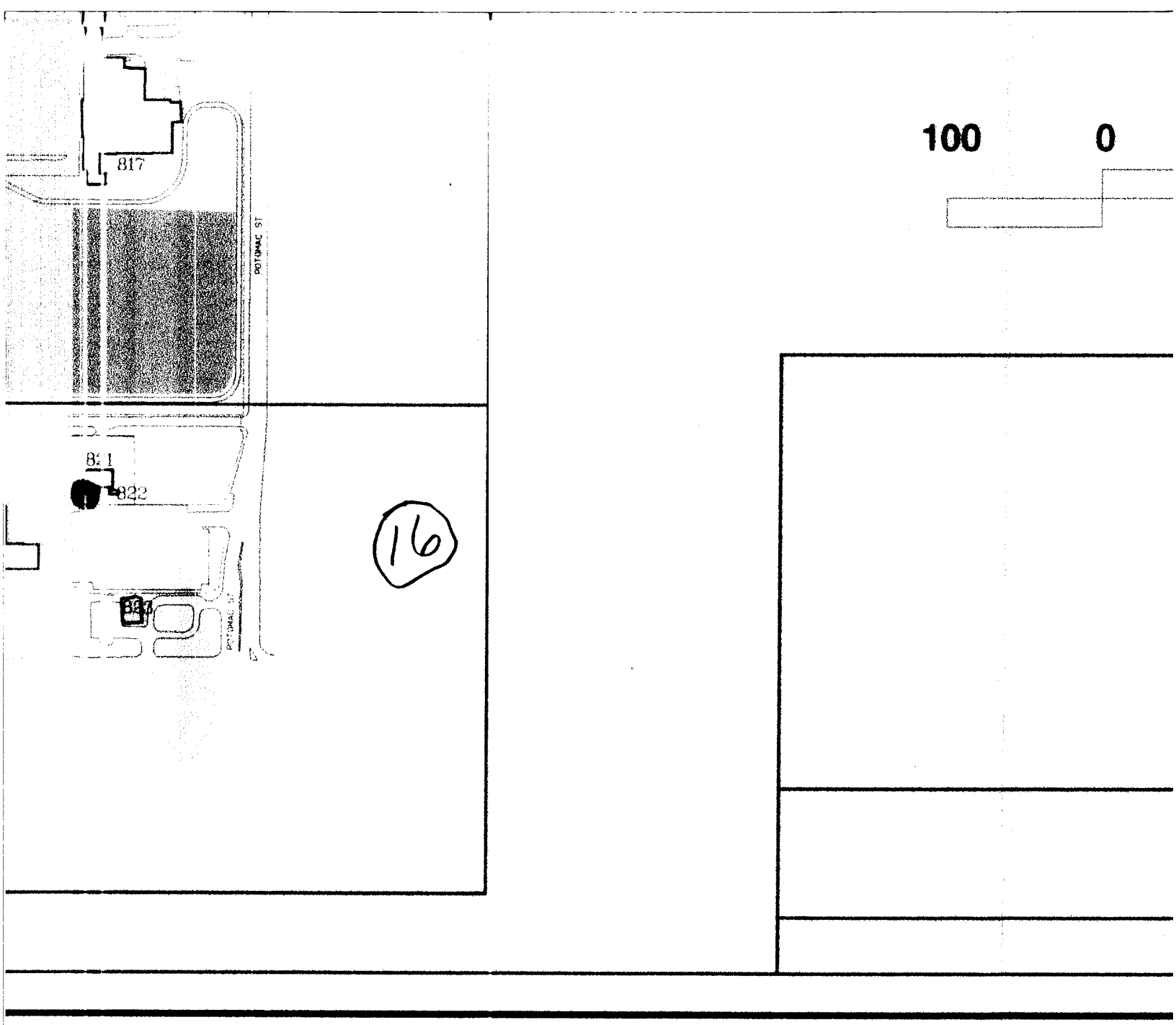
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SCALE IN METERS

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REVISION	DATE	DESCRIPTION	B
A	1/96	Draft Environmental Baseline Survey	J
B	4/96	Draft Environmental Baseline Survey	J
C	6/96	Final Environmental Baseline Survey	J

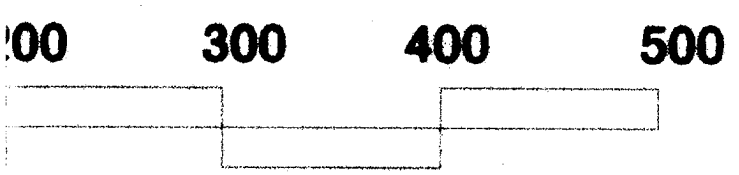
ENVIRONMENTAL BASELINE SURVEY FITZSIMONS ARMY MEDICAL CENTER

Source: Fitzsimons Army Medical Center

ENVIRONMENTAL BASELINE MAP

Projection: UTM - NAD27

Figure 6.1



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/96	Final Environmental Baseline Survey	JJ

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RONMENTAL BASELINE SURVEY
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ENVIRONMENTAL BASELINE MAP

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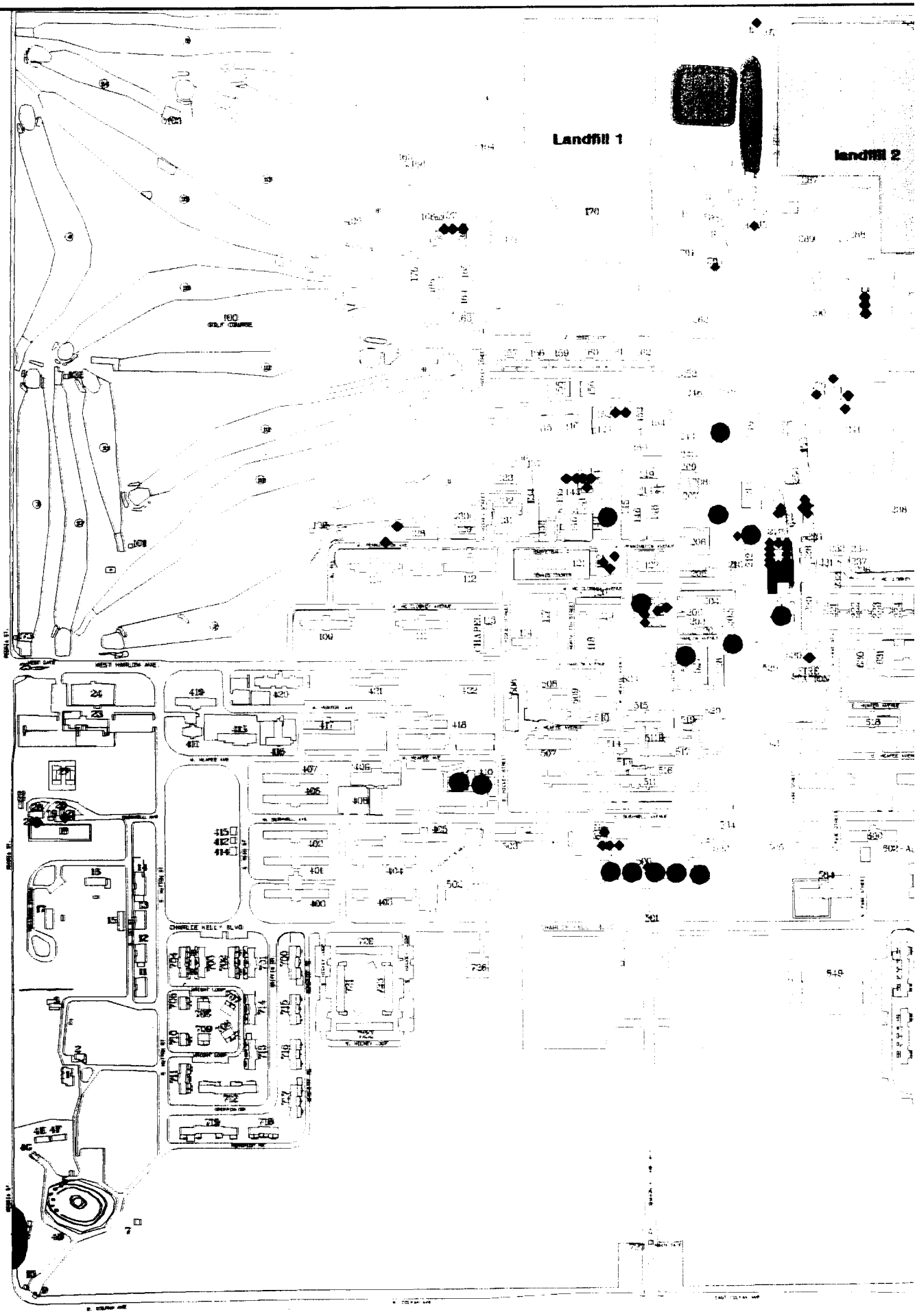
Figure 6.1


Landfill 1
landfill 2
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CHAPEL
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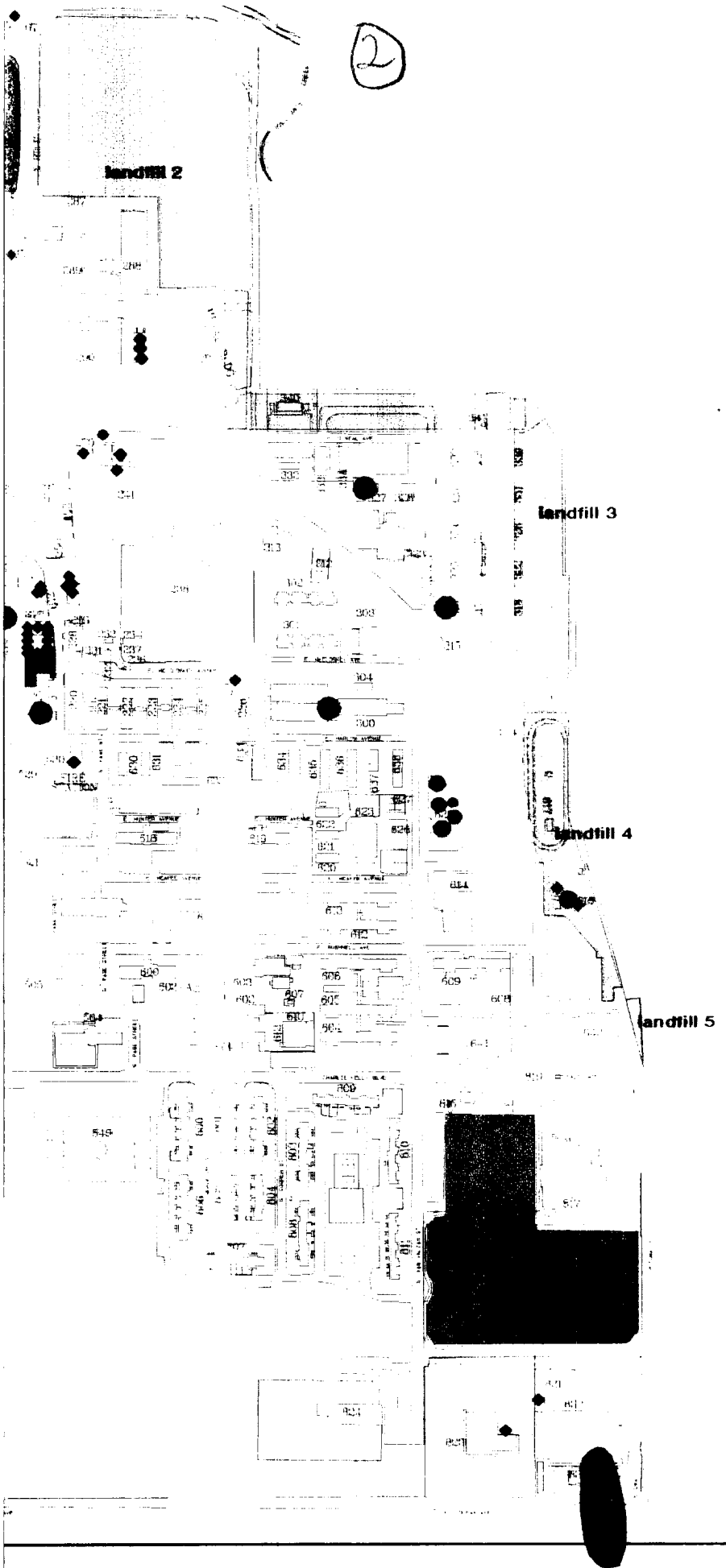

Legend

- Landfills
- Suspected Landfill
- Lagoons
- Spills
- Off-site Concerns
- UST's (current and for
- AST's (current and for
- Incinerators
- Oil/Water Separators

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SCALE IN METERS

REVISION	DATE	DESCRIPTION

ENVIRONMENTAL BASE
FITZSIMONS ARMY MED

SOURCE: [illegible] Army Medical Center

FAMC Sites of I
Con

Projection: UTM - NAD27

(3)

Legend

- Landfills
- Suspected Landfill
- Lagoons
- Spills
- Off-site Concerns
- UST's (current and former)
- AST's (current and former)
- Incinerators
- Oil/Water Separators

100 0 100 200 300 400

SCALE IN METERS

REVISION	DATE	DESCRIPTION	BY

ENVIRONMENTAL BASELINE SURVEY
FITZSIMONS ARMY MEDICAL CENTER

SOURCE: [illegible]

FAMC Sites of Environmental Concern

Projection UTM - NAD27

Figure 6.2

protect human health and the environment, and the property has been reclassified as Categories 1 through 4. A discussion of the results of the EBS organized by category is presented below.

In addition, a concurrent identification and screening process was undertaken for non-CERCLA environmental issues, particularly asbestos, lead-based paint, radon, radionuclides, and PCBs. The discussion below also addresses the results of findings for non-CERCLA issues. Adjacent or surrounding property sources and the remediation efforts underway at FAMC are also discussed.

6.1 CATEGORY 1 AREAS

Those areas identified as Category 1 occupy 320 acres primarily located on the south and central portions of FAMC. These locations have never stored hazardous substances or petroleum products, and no hazardous substances or petroleum products have been released or disposed. Those buildings identified as a Category 1 are presented in Table 6.1. The basis for their categorization is also presented in the table. Category 1 property includes vacant land, residential buildings, recreational areas, new construction, and administration buildings, and is described as follows.

- Vacant land. The vacant field on the south side of FAMC is currently leased to a farmer for agricultural purposes, and meets Category 1 criteria based on interviews with the farmer and FAMC personnel, who indicated that no pesticides or fertilizers have ever been used on the land. A review of aerial photographs and real property records indicated the area was vacant prior to the agricultural lease. Visual inspection of this area did not reveal the presence of staining or distressed vegetation.

- Residential buildings. The residential buildings located at FAMC are dispersed throughout the post. The CRS and Real Property records listed those buildings that have always been residential, or former TB wards that were converted to residential use. Based on interviews with FAMC personnel, hazardous substances were never used at TB wards to treat patients, and drugs used for the treatment of TB were not invented until the 1930s or 1940s. Based on the lack of use of hazardous substances or petroleum products and no visual evidence of release or disposal of hazardous substances or petroleum products, these buildings were identified as Category 1.

- Recreational areas. Recreational buildings at FAMC were determined to be Category 1, including the baseball fields, tennis courts, basketball courts, gymnasium, golf club house, current and former officer's clubs, outdoor picnic areas, and General's Park. Regulatory and FAMC records, Real Property records, visual inspections, interviews, and aerial photographs provided no evidence that hazardous substances or petroleum products were stored, released, or disposed in these areas.

- New construction. The CEP site, which is currently under construction, was identified as Category 1 because no hazardous substances or petroleum products were discovered during excavation and construction. Aerial photographs revealed this area was formerly used as a skeet range. FAMC records indicated that 1950s-vintage medical waste,

TABLE 6.1
LIST OF FAMC BUILDINGS IDENTIFIED AS CATEGORY 1
ENVIRONMENTAL BASELINE SURVEY
FITZSIMONS ARMY MEDICAL CENTER
AURORA, COLORADO

Current Building Name	Date of Construction	Current Building Number(s)	Category	Basis	Source of Evidence
Commanding Officer's Residence	1897	1	1	always been residential	CRS
Commanding Officer's Garage	1897	2	1	always been a residential garage	Dan Sullivan
Duck Pond	1927	4	1	always been pond	Real estate
General's Park Shelter with BBQ	1968	4A	1	always been General's Park Shelter with BBQ	Real estate
General's Park Shelter with BBQ	1968	4B	1	always been General's Park Shelter with BBQ	Real estate
General's Park Shelter with BBQ	1968	4C	1	always been General's Park Shelter with BBQ	Real estate
General's Park Shelter with BBQ	1968	4D	1	always been General's Park Shelter with BBQ	Real estate
General's Park Shelter with BBQ	1968	4E	1	always been General's Park Shelter with BBQ	Real estate
General's Park Shelter with BBQ	1968	4F	1	always been General's Park Shelter with BBQ	Real estate
General's Park Shelter with BBQ	1968	4G	1	always been General's Park Shelter with BBQ	Real estate
Basketball Court - General's Park	1930	6	1	always been basketball court	Real estate
Public Restroom	1919	9	1	formerly sentry station, currently restrooms	CRS
Public Restroom	1919	10	1	formerly sentry station, currently restrooms	CRS
Field Grade Officers' Quarters	1921	11	1	always residential	CRS
Field Grade Officers' Quarters	1921	12	1	always residential	CRS
Field Grade Officers' Quarters	1921	13	1	always residential	CRS
Field Grade Officers' Quarters	1921	14	1	always residential	CRS
Detached Garage	1921	15	1	always residential garage	Visual inspection, CRS
Field Grade Officers' Quarters	1947	16	1	always residential	CRS
Field Grade Officers' Quarters	1947	17	1	always residential	CRS
Water Reservoir	1918	18	1	always been potable water reservoir	CRS
Water Backflow Prevention Building	1989	22	1	always been BPD	Shari Matousek, CRS
Officers' Club	1923	24	1	always been child development center	James Corrigan, CRS
Sentry Station	1986	25	1	always been sentry station	Visual inspection
Installation Sign - Corner Park	1964	26	1	always been installation sign - corner park	Real estate
Tennis Courts	1975	27	1	always been tennis courts	Real estate
Pump House	1994	28	1	always been pump house for water distribution	Shari Matousek
Officers' Quarters	1919	109	1	prior to being residential, used as a TB ward	CRS
Officers' Quarters	1919	110	1	prior to being residential, used as a TB ward	CRS
Officers' Quarters	1919	111	1	prior to being residential, used as a TB ward	CRS
Officers' Quarters	1919	112	1	prior to being residential, used as a TB ward	CRS
Chapel	1942	113	1	always been a chapel	CRS
Civilian Personnel Office	1943	114	1	formerly residential, currently office space	CRS
Storehouse	1941	115	1	formerly residential, currently storehouse	Real estate, Harry Charlson, visual
Administration General Purpose	1923	117	1	formerly residential, currently office space	CRS
Engineering Administration	1918	118	1	formerly residential, currently office space	Visual inspection, CRS
Federal Credit Union	1918	119	1	formerly recreation and bank, currently administration	CRS, Amy Birmingham
EEO	1918	120	1	formerly residential, currently office space	CRS, Allen Hooks
Multiple Court/Basketball and Tennis	1940	121	1	always been basketball and tennis courts	Real estate
Playground	1989	123	1	always been playground	Real estate
Detached Garages	1936	129	1	always been residential garage	Visual inspection, CRS
Transportation Division	1944	130	1	recreation office space	Harold Montgomery
Army Community Service	1944	131	1	formerly residential, currently office space	Mr. Kubera, CRS

TABLE 6.1 (Continued)
LIST OF FAMC BUILDINGS IDENTIFIED AS CATEGORY 1
ENVIRONMENTAL BASELINE SURVEY
FITZSIMONS ARMY MEDICAL CENTER
AURORA, COLORADO

Current Building Name	Date of Construction	Current Building Number(s)	Category	Basis	Source of Evidence
Welcome Center	1944	132	1	formerly residential, currently office space	SFC Robert Sykes, CRS
Housing Division	1944	133	1	formerly residential, currently office space	Laura Gooch, CRS
Directorate of Facilities Engineering	1944	134	1	formerly residential, currently office space	Wayne Malone, CRS
Covered Picnic Area with BBQ	1948	136	1	always been covered picnic area with BBQ	Real estate
Family Housing Detached Garage	1936	155	1	always been residential garage	Visual inspection, CRS
Family Housing Detached Garage	1936	156	1	always been residential garage	Visual inspection, CRS
NCO Quarters	1921	157	1	always been residential	CRS
NCO Quarters	1921	158	1	always been residential	CRS
NCO Quarters	1921	159	1	always been residential	CRS
NCO Quarters	1921	160	1	always been residential	CRS
NCO Quarters	1921	161	1	always been residential	CRS
NCO Quarters	1921	162	1	always been residential	CRS
Golf Course Main Club House	1941	163	1	formerly residential, currently golf club house	CRS
NCO Family Housing	1922	164	1	always been residential	CRS
Storage	1924	165	1	formerly residential, currently storage for computers equipment	Dan Sullivan
Storage	1918	168	1	always been residential/vacant	CRS, visual inspection
Low-Level Wind Shear	1989	174	1	always been low-level wind shear	Real estate
Golf Cart Storage	1994	176	1	always been storage for golf carts	Visual inspection
General Purpose Playground	1970	195	1	always been general purpose playground	Real estate
Substation Building	1944	219	1	always been substation	Real estate
Youth Center	1940	220	1	always been recreational	Real estate
Hospital Core	1918	221	1	formerly residential, currently educational facility	CRS
Hospital Core - General Instruction	1918	224	1	formerly residential, currently educational facility	Sgt Johnson
OCHAMPUS	1919	225	1	formerly residential, currently office space	George Tubb
Audio-Visual Support Center	1941	226	1	formerly storeroom, currently audio visual administration	Gary Schmidt
Water Well Pump Building	1947	231	1	always been pump building	Real estate
Reservoir	1922	232	1	always been artesian well	CRS
Softball Field Restrooms	1948	233	1	always been restrooms	Real estate
Dugout - Softball Field 1	1950	234	1	always been dugout - softball field	Real estate
Scorekeeper/Storage at Field 1	1983	235	1	always been scorekeeper/storage of field 1	Real estate
Dugout - Softball Field 1	1920	236	1	always been a softball field	CRS
Bleachers - Softball Field 1	1953	237	1	always been bleachers - softball field	Real estate
Baseball Field	1920	238	1	always been baseball field	Real estate
Former Post Water Tower -	1947	239	1	always been post water tower - demolished	Real estate
Bleachers - Softball Field 1	1953	240	1	always been bleachers - softball field	Real estate
Softball Field 2 - Field 2	1945	241	1	always been softball field 2	Real estate
Softball Field 3 - Field 3	1963	242	1	always been softball field 3	Real estate
Central Energy Plant	1995	262	1	always been dugout - baseball field	Real estate
Scorekeeper - Dugout Softball Field	1983	280	1	always been scorekeeper - dugout softball field 2	Real estate
Dugout - Softball Field 2	1983	281	1	always been dugout - softball field 2	Real estate
Dugout - Softball Field 3	1982	282	1	always been dugout - softball field 3	Real estate
Dugout - Softball Field 3	1982	283	1	always been dugout - softball field 3	Real estate
Bleachers - Softball Field 3	1982	284	1	always been dugout - softball field 3	Real estate

TABLE 6.1 (Continued)
LIST OF FAMC BUILDINGS IDENTIFIED AS CATEGORY 1
ENVIRONMENTAL BASELINE SURVEY
FITZSIMONS ARMY MEDICAL CENTER
AURORA, COLORADO

Current Building Name	Date of Construction	Current Building Number(s)	Category	Basis	Source of Evidence
T-Ball Field	1990	285	1	always been T-ball field	Real estate
DPW Vehicle and Tire Shop	1995	287	1	currently under construction	Visual Inspection
DPW Maintenance Shop	1995	288	1	currently under construction	Visual Inspection
DPW Warehouse	1995	289	1	currently under construction	Visual Inspection
Central Energy Plant	1995	290	1	currently under construction	Visual Inspection
USAMEOS Dormitory	1964	300	1	always been residential	Real estate
Smith House Medical Center	1985	301	1	always been residential	Real estate
Housing	1985	302	1	always been residential	Real estate
Conley Hall	1974	303	1	always been residential	Real estate
BBQ Area	1985	304	1	always been BBQ area	Real estate
Tennis Courts	1948	312	1	always been tennis courts	Real estate
General Storehouse	1955	314	1	always been a storehouse	Real estate
Post Publication	1942	315	1	always been a storehouse	Mike Cahill
Administration General Purpose	1942	317	1	formerly recreation, currently office space	Real Estate
Selective Service - Administration	1942	318	1	formerly recreation, currently office space	Dorothy Morris
Enl. Barracks - Annual Training	1942	320	1	always been residential	Real estate
Enl. Barracks - Annual Training	1942	321	1	always been residential	Real estate
OCHAMPUS/DOIM -	1942	322	1	formerly residential, currently office space	George Tubb
Enl. Barracks - Annual Training	1942	324	1	always been residential	Real estate
General Storehouse	1942	325	1	formerly recreation, currently storehouse	Real estate
Army Reserve Control - USARF	1942	326	1	formerly recreation, currently office space	Mr. Miller
Deputy - Veterinary Activities	1942	328	1	formerly post exchange, currently office space	CRS, visual inspection
Thrift Shop	1942	329	1	formerly residential, currently thrift shop	Real estate
Army Reserve Control - USARF	1942	331	1	formerly residential, currently office space	Mr. Miller
General Instruction Building	1942	332	1	always been educational facility	Real estate
General Storehouse	1942	333	1	formerly theater, currently storehouse	Rocky Eldridge, Byron O'Bailey
Army Reserve Center	1942	334	1	storage of furniture; no evidence of other storage	Sgt. Cleveland
RV Camp Sites		336	1	always been RV camp sites	Real estate
Thrift Shop	1942	337	1	formerly residential, currently thrift shop	Real estate
Storehouse	1942	338	1	formerly residential, currently storehouse	Sfc. Preseus Torres, Real estate
Army Reserve Control - USARF	1942	339	1	formerly residential, currently office space	Mr. Miller
Running Track	1989	342	1	always been running track	Real estate
Officers' Quarters	1943	401	1	always been residential	CRS
Officers' Quarters	1942	406	1	always been residential	CRS
Officers' Quarters	1942	407	1	always been residential	CRS
Outpatient Clinic	1945	408	1	has been administration and clinic	SSgt Gardner
Fisher House	1993	411	1	always been residential	Real estate
Reviewing Stand at Parade Field	1968	412	1	always been reviewing stand at parade field	Real estate
Child Development Center	1944	413	1	has been recreation center, child development center, benign storage	Jon Grayson, Real estate
Parade Field Bleachers	1968	414	1	always been parade field bleachers	Real estate
Parade Field Bleachers	1968	415	1	always been parade field bleachers	Real estate
Child Development Center	1943	416	1	has been mess hall, child development center, benign storage	Real estate
Internal Medicine	1918	417	1	has been TB ward and clinic	SSgt Gardener

TABLE 6.1 (Continued)
LIST OF FAMC BUILDINGS IDENTIFIED AS CATEGORY 1
ENVIRONMENTAL BASELINE SURVEY
FITZSIMONS ARMY MEDICAL CENTER
AURORA, COLORADO

Current Building Name	Date of Construction	Current Building Number(s)	Category	Basis	Source of Evidence
Visiting Officer Quarters	1942	419	1	always been residential	Real estate
NCO Family Quarters	1919	420	1	always been residential	CRS
U.S. Army Readiness Group	1919	421	1	always been residential	CRS
Chapel Center	1919	422	1	has been infirmary and chapel	CRS
General Purpose Playground	1919	423	1	always been general purpose playground	Real estate
Parade Field	1918	424	1	always been parade field	Real estate
Information Sign		425	1	always been information sign	Real estate
Flagpole	1941	501	1	always been flagpole	Real estate
Well Child Clinic	1918	506	1	formerly mess hall and kitchen, currently clinic	CRS
Administration/Storage	1918	508	1	former mess, kitchen, recreation, currently office space benign	Sgt. Cox, CRS
Administration - General Purpose	1918	509	1	formerly residential, currently office space	CRS
Commissary	1918	520	1	formerly mess and ktchen, currently commissary	CRS
Memorial - Charlie Kelly	1993	523	1	always been memorial - Charlie Kelly	Real estate
Red Cross Building	1918	524	1	always been Red Cross facility	CRS, Real Estate
Memorial	1918	525	1	always been memorial	Real estate
Commissary/Office	1918	527	1	formerly storehouse, currently commissary	CRS
Firehouse	1942	531	1	always been the firehouse	Visual inspection
Staff Judge Advocate Office	1942	608	1	formerly clinic, currently office space	Real estate
OCHAMPUS Office	1919	618	1	formerly infirmary, currently office space	George Tubb
ACES Facility	1919	619	1	formerly TB ward, currently educational facility	Larry Monke
Child Adolescent Psychiatric Service	1941	620	1	formerly residential, currently clinic	Lisa Allen
Hospital Clinic	1941	621	1	formerly residential, currently clinic	Sgt Marshall Lynn
Administration	1941	622	1	formerly residential, currently office space	Cynthia Romstrom
Physical Fitness	1944	623	1	always been gymnasium	Real estate
Basketball Court - Outside Gym	1945	626	1	always been basketball court - outside gym	Real estate
Handball Court - Outside Gym	1945	627	1	always been handball court - outside gym	Real estate
OCHAMPUS Print Plant	1941	630	1	formerly duplicating center, currently office space	Bill Orchard
Barracks	1941	631	1	always been residential	CRS
NCO Family Housing	1919	632	1	always been residential	Cindy Larson
Garage	1935	633	1	always been residential garage	CRS, visual inspection
Quade Conference Center	1941	634	1	always been auditorium	CRS
Quade Center Annex	1942	635	1	formerly residential, currently office space	Real estate
Enlisted Barracks	1941	636	1	always been residential	CRS
Student Company Medical Holding	1941	637	1	formerly mess and kitchen, currently office space	CRS
Enlisted Barracks	1941	638	1	always been residential	CRS
Playground	1989	639	1	always been playground	Real estate
Gazebo	1989	640	1	always been gazebo	Real estate
Fitzsimons Federal Credit Union	1993	641	1	always been bank	Real estate
Consolidated Club	1995	642	1	always been officer's club	Real estate
Family Housing	1962	700	1	always been residential	Real estate
Family Housing	1962	701	1	always been residential	Real estate
Family Housing	1962	702	1	always been residential	Real estate
Family Housing	1962	703	1	always been residential	Real estate

TABLE 6.1 (Continued)
LIST OF FAMC BUILDINGS IDENTIFIED AS CATEGORY 1
ENVIRONMENTAL BASELINE SURVEY
FITZSIMONS ARMY MEDICAL CENTER
AURORA, COLORADO

Current Building Name	Date of Construction	Current Building Number(s)	Category	Basis	Source of Evidence
Family Housing	1962	704	1	always been residential	Real estate
Family Housing	1962	705	1	always been residential	Real estate
Family Housing	1962	706	1	always been residential	Real estate
Family Housing	1962	707	1	always been residential	Real estate
Family Housing	1962	708	1	always been residential	Real estate
Family Housing	1962	709	1	always been residential	Real estate
Family Housing	1962	710	1	always been residential	Real estate
Family Housing	1962	711	1	always been residential	Real estate
Family Housing	1962	712	1	always been residential	Real estate
Family Housing	1962	713	1	always been residential	Real estate
Family Housing	1962	714	1	always been residential	Real estate
Family Housing	1962	715	1	always been residential	Real estate
Family Housing	1962	716	1	always been residential	Real estate
Family Housing	1962	717	1	always been residential	Real estate
Family Housing	1962	718	1	always been residential	Real estate
Family Housing	1962	719	1	always been residential	Real estate
BBQ Military - Female	1959	720	1	always been residential	Real estate
BBQ Military - Female	1959	721	1	always been residential	Real estate
BOQ Military - Female	1959	722	1	always been residential	Real estate
BOQ Military - Female	1959	723	1	always been residential	Real estate
Fixed BBQ Outdoors	1959	724	1	always been fixed BBQ outdoors	Real estate
Fixed BBQ Outdoors	1959	725	1	always been fixed BBQ outdoors	Real estate
Helipad	1968	726	1	always been helipad	Real estate
Sentry Station - Main Gate South	1952	727	1	always been sentry station	Real estate
Information Sign - Front Gate	1987	728	1	always been information sign front gate	Real estate
Memorial - Sharon A. Lane	1993	729	1	always been memorial - Sharon A. Lane	Real estate
Playground	1989	730	1	always been playground	Real estate
Playground	1989	750	1	always been playground	Real estate
Playground	1989	751	1	always been playground	Real estate
Family Housing	1962	800	1	always been residential	Real estate
Family Housing	1962	801	1	always been residential	Real estate
Family Housing	1962	802	1	always been residential	Real estate
Family Housing	1962	803	1	always been residential	Real estate
Family Housing	1962	804	1	always been residential	Real estate
Family Housing	1962	805	1	always been residential	Real estate
Family Housing	1962	806	1	always been residential	Real estate
Family Housing	1962	807	1	always been residential	Real estate
Family Housing	1962	808	1	always been residential	Real estate
Family Housing	1950	809	1	always been residential	Real estate
Family Housing	1950	810	1	always been residential	Real estate
Family Housing	1950	811	1	always been residential	Real estate
Playground	1989	812	1	always been playground	Real estate
Burger King	1991	816	1	always been fast food restaurant	Real estate

TABLE 6.1 (Continued)
LIST OF FAMC BUILDINGS IDENTIFIED AS CATEGORY 1
ENVIRONMENTAL BASELINE SURVEY
FITZSIMONS ARMY MEDICAL CENTER
AURORA, COLORADO

Current Building Name	Date of Construction	Current Building Number(s)	Category	Basis	Source of Evidence
Post-Exchange	1976	817	1	always been post exchange	Real estate
Sewage Lift Station Manhole	unknown	818	1	always been sewage lift station manhole	Real estate
Sentry Station - Main Gate East	1975	819	1	always been sentry station	Real estate
Child Development Center	1993	824	1	always been a child development center	Real estate
General Purpose Playground	1951	850	1	always been general purpose playground	Real estate
General Purpose Playground	1970	851	1	always been general purpose playground	Real estate

newspapers, bottles, and cans were found during excavation activities; however, prior to construction of the CEP, the waste was excavated and properly disposed offsite.

- Administrative buildings. Administrative buildings were determined to be Category 1 if it could be proven through review of the CRS, FAMC records, interviews, and visual inspections that the buildings had always been used for office functions. Those buildings that are currently used for administrative functions but previously had a different use that may have involved hazardous substances or petroleum products were not classified as Category 1. Administrative buildings identified as Category 1 included those used for banking, engineering, education, benign storage, thrift shops, the chapel, and others.

6.2 CATEGORY 2 AREAS

Numerous areas on FAMC property occupying approximately 18 acres were classified as Category 2. By definition, these areas used or stored hazardous substances, petroleum products, or hazardous or petroleum wastes, but no substances or wastes have ever been released or disposed. Those areas considered Category 2 are further discussed below.

- Building No. 19 (Chlorine House) is located on the west side of FAMC. Interviews with FAMC personnel revealed that Building No. 19 was constructed in 1948 and formerly stored one cylinder of chlorine at a time to chlorinate water entering the FAMC water distribution system from the City of Denver. Visual inspection of the building showed that it is no longer used for storage of hazardous substances. In addition, no information was found through review of regulatory or FAMC records and interviews with FAMC personnel that indicated that hazardous substances or petroleum products had been released or disposed in Building No. 19.

- Building No. 29 (Aboveground Storage Tank) is located on the west side of FAMC. Visual inspection of this tank revealed that it is new, has spill containment, and meets all current regulations. No information was found through review of regulatory or FAMC records or interviews with FAMC personnel that indicated that petroleum products had been released or disposed from Building No. 29.

- Building No. 116 (Storehouse) is centrally located on the north side of FAMC. Real Property records indicated that Building No. 116 was formerly used as a barracks and is currently used as a storehouse The building was moved to its present location from the northeast side of FAMC. The Hazardous Material Inventory Database identified the building as storing equipment and copper sulfate. Regulatory and FAMC records did not identify any instances when hazardous substances or petroleum products had been released or disposed in the building.

- Building No. 253 (Chlorine Storage) is centrally located on the north side of FAMC. Interviews with FAMC personnel revealed that Building No. 253 was formerly used to store chlorine to support the WWTP. Results of the visual inspection found that the building is no longer used for storage of hazardous substances or petroleum products. No information was found through review of regulatory and FAMC records and

interviews with FAMC personnel that indicated chlorine had been released or disposed in Building No. 253.

- Building No. 323 (Bowling Center) is located on the east side of FAMC. Real Property records indicated that Building No. 323 has always been used as a bowling alley. Interviews with FAMC personnel revealed that hazardous substances, such as thinners and lacquers, have been used and stored at the building. Regulatory and FAMC records did not reveal that hazardous substances or petroleum products had been released or disposed in Building No. 323.

- Building No. 400 (Officers' Quarters) is located on the west side of FAMC. Real Property records indicated that Building No. 400 was formerly used for officers' and nurses' quarters and is currently used for residential purposes. Interviews with FAMC personnel revealed that the building is also currently used as the central storage area for cleaning supplies used by Fitzsimons Lodge and other residential areas. Regulatory and FAMC records and interviews with FAMC personnel did not indicate any areas of the building where hazardous substances or petroleum products have been released or disposed.

- Building No. 526 (Communications Center) is centrally located on FAMC. The CRS and Real Property records indicated that Building No. 526 was formerly the Post Exchange and Bank, and is currently a Communications Center. FAMC spill records indicated that a spill from a battery occurred in this building and was immediately cleaned up. For this reason, the building was identified as Category 2 even though routine storage of hazardous substances or petroleum products could not be confirmed.

- Building No. 528 (Medical Department Office and Stores Warehouse) is centrally located on FAMC. The CRS identified that Building No. 528 has always been used as a warehouse. Interviews with FAMC personnel revealed that bleach and various sealants are currently stored in the building. Regulatory and FAMC records and interviews with FAMC personnel did not identify any areas where hazardous substances or petroleum products were released or disposed in Building No. 528. However, a 5-gallon diesel spill occurred immediately north of Building No. 528 and was cleaned up at that time. This spill area has been identified as a Category 3.

Several geographically contiguous areas, classified as Category 2, have been linked together for convenience as follows:

- Building Nos. 166 and 169 are located on the northwest side of FAMC. The CRS and Real Property records indicated that both buildings were formerly residential garages. Visual inspection of Building No. 166 showed the presence of paint supplies, and visual inspection of Building No. 169 revealed the presence of gasoline and paint supplies. Regulatory and FAMC records did not identify any areas where hazardous substances or petroleum products had been released or disposed.

- Building Nos. 222 and 223 are centrally located on FAMC. The CRS and Real Property records indicated that both buildings were formerly used as barracks and are currently

used for administration. FAMC records indicated that Building No. 223 was formerly used to store photographic chemicals and arts and crafts supplies. Interviews with FAMC personnel indicated that Building No. 222 was the former location of Outdoor Recreation and that hazardous substances and petroleum products used to maintain recreational equipment were stored in that building. Regulatory and FAMC records and interviews with FAMC personnel did not identify any areas where hazardous substances or petroleum products had been released or disposed in Building Nos. 222 or 223.

- Building Nos. 409, 418 and 507 are located on the west side of FAMC. The CRS and Real Property records indicated that Building Nos. 409 and 418 were formerly TB wards and are currently used as hospital clinics. Building No. 507 was formerly a nurses' quarters and pharmacy and is currently vacant. Interviews with FAMC personnel revealed that developer is stored in Building No. 409, and chemicals to process frozen sections are stored in Building No. 418. Regulatory and FAMC records and interviews with FAMC personnel did not indicate any areas where hazardous substances or petroleum products had been released or disposed.

- Building Nos. 502 and 503 are located on the west side of FAMC. The CRS indicated that Building Nos. 502 and 503 were formerly TB wards. Real Property records revealed that all of the buildings are currently used as hospital clinics. Visual inspection of Building No. 502 revealed that it formerly stored hazardous substances. The Hazardous Material Inventory Database indicated that Building No. 503 stores developer. Regulatory and FAMC records and interviews with FAMC personnel did not indicate any areas where hazardous substances or petroleum products had been released or disposed in these buildings.

- Building Nos. 604, 605, 606, 609, 612, 613, and 614 are located in an area on the east side of FAMC. Real Property records indicated that Building Nos. 604, 605, 606, and 609 were formerly used as hospital wards and are currently used for instruction, administration, and a hospital clinic. Real Property records also indicated that Building Nos. 612 and 613 were formerly used for housing and are currently used for training FAMC personnel. In addition, Real Property records indicated that Building No. 614 has always housed the swimming pool for FAMC. The Hazardous Material Inventory Database revealed that hazardous substances were stored in Building Nos. 604, 605, 606, 612, and 613 and that chlorine has been stored in Building No. 614. Interviews with FAMC personnel indicated that 55-gallon drums were formerly stored in the basement of Building No. 609. Regulatory and FAMC records and interviews with FAMC personnel did not identify any areas where hazardous substances or petroleum products had been released or disposed in these buildings.

6.3 CATEGORY 3 AREAS

Three areas on FAMC occupying approximately 0.34 acres have been identified as Category 3. By definition, a release of petroleum products to the environment has been confirmed in these areas, but results from followup sampling indicate concentrations are below regulatory limits. Those areas identified as Category 3 include the former location of

USTs associated with Building Nos. 20 and 270, and a diesel spill that occurred north of Building No. 528 (Medical Department Office and Stores Warehouse).

The UST associated with Building No. 20 (Water Pump Station) was located between Building No. 20 and Building No. 21, a garage. The last known use of the former UST was in 1982 and it is assumed to have held gasoline or diesel fuel. The tank was removed in January 1991. Soil samples collected during removal of the tank revealed the presence of ethylbenzene and xylenes at concentrations near detection limits and below soil cleanup levels as defined by remedial action categories (RAC) (CDH, 1991).

The UST associated with Building No. 270 (Marty's Garage) was located southeast of Building No. 270, formerly the Auto Hobby Shop. The UST was a 500-gallon-capacity steel used oil tank, removed in January 1991. The soil samples collected during removal of the UST indicated that TPH was present, but at concentrations within limits suggested by RAC guidance.

The area north of Building No. 528 is the site of a diesel spill that occurred in 1994. Five gallons of diesel fuel were spilled on the ground. Remedial activities at the site included removing the contaminated soil.

6.4 CATEGORY 4 AREAS

One area on FAMC property occupying approximately 0.71 acre has been identified as Category 4. This area includes the former location of USTs in the location of former Building No. 230, north of Building No. 228 (Entomology Division Laboratory and Veterinarian Clinic). The contamination associated with this incident has been remediated to below regulatory cleanup levels.

The area north of former Building 230 (north of Building No. 228) is the former location of a fuel storage site for DOL. Four USTs were used to store gasoline and kerosene. The four USTs were removed in 1994, and the contaminated soil was removed and incinerated (see Section 5.1.3 for additional information).

6.5 CATEGORY 5 AREAS

Two areas on FAMC property occupying approximately 1.50 acres have been identified as Category 5. These areas originate from offsite sources and are described below in Section 6.9, Adjacent or Surrounding Property Sources.

6.6 CATEGORY 6 AREAS

Three areas on FAMC property occupying approximately 2.15 acres have been identified as Category 6. These areas have been impacted by leaking USTs associated with Building Nos. 135 (AAFES Station), 215 (Powerhouse), and 820/821 (Army Reserve Center).

A UST at the AAFES Station (Building No. 135) was determined to have failed an annual tightness test, and the fill line to the regular unleaded tank was found to be leaking. Results of

the initial investigation indicated that both soil and groundwater contamination exists in excess of State of Colorado action levels. Interviews with FAMC personnel indicated that three USTs were discovered and removed immediately east of Building No. 122 in February 1996. Two 10,000-gallon and one 1,000-gallon tanks filled with sand were removed. An investigation has recently been completed and the full extent of contamination has been determined.

Building No. 215 and associated USTs were identified as a Category 6. Numerous spills have occurred at these USTs and this building. The construction contract for the CEP at FAMC includes remediation of this area.

Interviews with FAMC personnel indicated that the USTs located at Building Nos. 820 and 821 were recently removed. Soil samples collected at the time the UST was excavated near Building No. 821 showed signs of petroleum contamination. Additional soil samples collected since that time have shown concentrations of petroleum products above the State of Colorado action levels. The site is currently under investigation.

6.7 CATEGORY 7 AREAS

A very large area of FAMC property occupying approximately 236 acres has been identified as Category 7. These sites of environmental concern have been impacted primarily from landfilling, maintenance, medical, and irrigation activities. No environmental characterization has been performed at these sites, and they require further investigation before they can be characterized.

Buildings

- Building No. 3 (Commanding Officer's Storehouse) is located on the southeast side of FAMC. The CRS and Real Property records indicated that Building No. 3 has always been used as a storehouse by the Commanding Officer. Interviews with FAMC personnel indicated that this building has historically been used by the Roads and Grounds Department to store motor oil, gasoline, lawn equipment, pesticides, and fertilizers. Visual inspection of the building revealed that the condition of the floor is poor.

- Building Nos. 5 (General's Park General Storehouse) and 7 (General Storehouse - Youth Services) are located on the southwest side of FAMC. The CRS and Real Property records indicated the buildings have always been used for maintenance storage for General's Park. Interviews with FAMC personnel indicated that the buildings were formerly used for storage of pesticides and fertilizers, and the floors are made of wood.

- Building No. 23, Information, Tickets, and Reservations (ITR), is located on the west side of FAMC. The CRS indicated that Building No. 23 was formerly used as an officers' garage. Visual inspection of the building revealed that it is currently being used by Outdoor Recreation for storage and distribution of recreational equipment. Hazardous substances and petroleum products used to maintain recreational equipment are currently stored at the building. Visual inspection of the area immediately south of Building No. 23 revealed that it is currently being used for storage and maintenance of

recreational equipment. Stains were observed on the bare ground, indicating possible leakage of batteries and petroleum products.

- Building No. 122 (Pest Control and Storage) is located on the west side of FAMC. The CRS indicated that Building No. 122 was originally constructed as a nurses' garage and is currently used to store and mix pesticides and herbicides. Numerous floor drains, chemicals, and a pesticide mixing operation were observed during visual inspection of the building. Due to the age of the building and the historical practice of disposing of hazardous substances through the sanitary sewer system, this building was identified as Category 7.

- Building No. 128 (Tractor Shop) is located on the west side of FAMC. The CRS indicated that Building No. 128 was originally constructed as an officers' garage and is currently used as a maintenance shop for large vehicles and equipment. Visual inspection of the building revealed that hazardous substances and petroleum products are used in the building, and it is suspected that a grease pit was filled in with concrete. Interviews with FAMC personnel indicated that an oil/water separator collects discharges from the building. The oil/water separator has not been properly maintained, and used oil spills were prevalent on the ground north of the building. FAMC personnel also stated that batteries which occasionally leaked acid were formerly stored on pallets in the gravel parking lot immediately west of the building.

- Building No. 137 (General Storehouse) is centrally located on the north side of FAMC. Real Property records indicated that Building No. 137 was formerly used for engineering and facility maintenance. Interviews with FAMC personnel revealed that the building is currently used as a storehouse and that it was formerly used for maintenance. The building has since been converted such that its original use is unrecognizable. FAMC personnel also indicated that the building currently stores paint, gasoline, and nonhazardous equipment.

- Building No. 227 (Water Pump Station) is centrally located on FAMC. Information provided by FAMC personnel indicated that a UST was discovered immediately north of Building No. 227 during the water storage tank removal project. The tank is believed to be a 500-gallon diesel fuel tank, formerly used to fuel a backup generator.

- Building No. 228 (Entomology Division Laboratory and Veterinary Clinic) is centrally located on FAMC. The CRS and Real Property records revealed that Building No. 228 was formerly used as a guard house and is currently used as the entomology laboratory. Numerous floor drains, chemicals, and a pesticide mixing operation were observed during visual inspection of the building. Due to the age of the building and the historical practice of disposing of hazardous substances through the sanitary sewer system, this building was identified as Category 7.

- Building No. 260 (University of Colorado Health Science Center Perinatal Research) is not part of the FAMC decommissioning process. The University will remain on site as a functioning organization. The University leases the land from FAMC, and the building

and improvements were constructed and are owned by the University. Interviews with FAMC personnel indicated that Building No. 260 uses radioactive materials for research.

- Building No. 270 (Marty's Garage) is located on the northeast side of FAMC. Real Property records indicated that Building No. 270 was formerly used as the Auto Hobby Shop. The building is currently an automotive repair shop called "Marty's Garage." Interviews with FAMC personnel revealed that an oil/water separator is located at Building No. 270, and FAMC records indicated that Building No. 270 is connected to the sanitary and stormwater sewer systems.

- Building No. 300 (USAMEDS Dormitory) is located on the east side of FAMC. FAMC records indicate that PCB spills have previously occurred immediately west of Building No. 300.

- Former Building No. 313 (Washrack) is located on the northeast side of FAMC. Interviews with FAMC personnel indicated that Building No. 313 is the location of an abandoned washrack for cleaning automobiles, and that grease and oils were prevalent on the ground in this area.

- Building No. 316 (Directorate of Information Management [DOIM] Administration and Print Plant) is located on the east side of FAMC. Real Property records and interviews with FAMC personnel indicated that Building No. 316 was formerly used for printing operations. Visual inspection of the building found that it is currently used for duplicating operations and administration. FAMC personnel revealed that this building and area have historically been used to store hazardous substances and printing waste, and that standard practice included disposing of inks and solvents in the sanitary sewer system. During visual inspection of the building, a small empty building located immediately east of Building No. 316 was observed. Interviews with FAMC personnel indicated that this building was formerly used for hazardous substance storage.

- Building No. 327 (USARAMEDD) is located on the east side of FAMC. FAMC records indicated that this building was formerly used to store pesticides and fertilizers. Visual inspection of the building found that it is currently used for administration. Regulatory records indicated that DDT had leaked from 55-gallon drums formerly stored in this building. The stains on the floor of the building and the offsite shipment of the DDT are well documented in EPA and CDPHE records.

- Building Nos. 529 (Laundry) and 530 (Military Clothing) are centrally located on FAMC. The CRS and interviews with FAMC personnel indicated that Building No. 529 may have been used for laundry and dry cleaning activities, and as an accumulation point for hazardous waste from the Optical Fabrication Laboratory. Building No. 530 was formerly used as a workshop and print shop, and for furniture storage. Interviews with FAMC personnel indicated the piping systems beneath both buildings may be questionable and chemical contamination may be present.

- Building No. 628, (Optical Fabrication Laboratory) is located on the east side of FAMC. Real Property records indicated that Building No. 628 has always been used as the

Optical Fabrication Laboratory. Interviews with FAMC personnel identified that during recent work on piping in the building, a large pool of liquid, thought to be hydrocarbons, was found beneath the floorboards. FAMC personnel also mentioned that historically it was standard practice to dispose of solvents and chemicals in the sanitary and stormwater sewer systems. FAMC spill records identified numerous spills at the building. In addition, CDPHE records revealed that hazardous waste was improperly disposed of in municipal dumpsters outside of Building No. 628.

Several geographically contiguous areas which are classified as Category 7 have been linked together for convenience as follows:

- A Category 7 area was identified centrally located on FAMC, immediately north of Building No. 222. Interviews with FAMC personnel indicated that this area was formerly used to store recreational equipment for Outdoor Recreation activities, including campers, boats, and other equipment. FAMC personnel also indicated that maintenance activities occurred, and gasoline and oils were infrequently spilled in this area.

- A Category 7 area was identified on the central portion of FAMC. This area consists of the main hospital and research and development facilities, including buildings in the 400, 500, and 600 series.

  Building Nos. 402, 403, and 404 were identified as Category 7 due to the use or storage of radioactive materials or waste as documented in FAMC radiological records. The Hazardous Materials Inventory report indicated that Building Nos. 405 and 410 store non-radioactive hazardous substances including solvents. Interviews with FAMC personnel revealed that the piping systems beneath all of these buildings may have leaked over the years.

  Buildings that were identified as Category 7 due to the use or storage of radioactive materials or waste include Building Nos. 500, 505, 511, 515, 519, and 521. Interviews with FAMC personnel indicated that Building Nos. 504 and 513 have used hazardous substances, and the integrity of the piping systems beneath the buildings is questionable. Building Nos. 500, 505, and 511 have used radioactive materials. Building Nos. 510 and 515 were formerly used as dry cleaners and also have questionable piping beneath the buildings. Interviews with FAMC personnel also revealed that Building No. 519 was used to accumulate hazardous waste. Personnel interviews indicated that Building No. 521 was formerly a print shop. This area includes the location of the former Optical Fabrication Laboratory that is currently overlain by a parking lot.

  Interviews with FAMC personnel and review of FAMC radiological records identified the use or storage of radioactive materials or wastes in Building Nos. 600, 601, 602, 603, and 610. Building No. 607 requires approved closure due to the accumulation of hazardous wastes. Interviews with FAMC personnel indicated that Building No. 611 was formerly used as a print plant.

Because the extent of contamination at the main hospital and surrounding grounds is unknown, the remaining buildings in close proximity to those in this Category 7 area were identified as Category 7.

- A Category 7 area was identified on the central portion of FAMC. Buildings in this area provide maintenance and utility support for FAMC. This area includes buildings from the 100 and 200 series.

  Interviews with FAMC personnel indicated that Building Nos. 138, 139, and 140 are used to store pesticides and fertilizers, and Building No. 139 has a dirt floor. FAMC personnel indicated that petroleum products were used to keep the weeds down and had been spilled near Building No. 142. Visual inspection of Building Nos. 143 and 144 revealed petroleum stains on a dirt floor and numerous floor drains. FAMC personnel indicated that the automotive repair shop called "Marty's Garage" was formerly located in Building No. 143. Visual inspection of Building No. 145 indicated that oils and greases were used in the metals shop, and numerous repairs had been made to the concrete floor. Interviews with FAMC personnel who worked in the shop stated that they formerly poured spent oil and solvents onto the ground outside the metals shop. Interviews with FAMC personnel also revealed that Building No. 148 formerly had a solvent dip tank, and the piping beneath the building may have leaked. The area in the vicinity of Building Nos. 152 and 153 was identified as Category 7 due to a former AST fuel farm as indicated by FAMC personnel.

  Building Nos. 201, 202, 203, 204, 206, 209, 212, 213, 217, 219, and 248 are located on the east side of the Category 7 area. Interviews of FAMC personnel indicated that automobile maintenance has occurred in Building Nos. 200 through 204 since the 1920s, and that oil, grease, and solvents were used during that time. Visual inspection of these buildings revealed numerous floor drains, grease pits, and wash racks. The CRS indicated that Building No. 206 was formerly used as a print shop. Visual inspection of Building No. 209 revealed the presence of a paint booth, floor drains, and a sump. Interviews with FAMC personnel indicated that solvents and waste paint were disposed in the parking lot immediately east of Building No. 209. Regulatory records identified the area immediately south of Building No. 246 as the suspected location of a chemical fire that burned down a building. Interviews and visual inspections revealed that Building No. 212 formerly had a solvent dip tank that leaked beneath the building. Historical documentation indicated that the first incinerator at FAMC was located immediately west of Building No. 212. Interviews with FAMC personnel indicated that the area where Building Nos. 217 and 219 are located is suspected to be contaminated from spills that may have occurred, and the location where coal formerly was stored. Visual inspection revealed a transformer stored in Building No. 248 and equipment stored on a dirt floor. The salvage yard, including Building Nos. 250, 251, and 252 is within this area, and according to FAMC personnel, chemicals and transformers have been stored on the bare ground.

  Because the extent of contamination at the salvage yard and around many of the buildings in the industrial area is unknown, the remaining buildings in close proximity to those specifically identified in this Category 7 area were identified as Category 7.

- A Category 7 area was identified on the northwest corner of FAMC that includes the golf course and associated buildings. Real Property and interviews of FAMC personnel indicated that the golf course and driving range have been irrigated with treated effluent from the WWTP. This effluent is suspected to have formerly contained low-level radionuclides, heavy metals, and other chemicals based on historical disposal practices. Building Nos. 106, 107, and 167 are also located within this area. Visual inspection of Building No. 167 revealed ASTs in this area, and stains were noted on the ground. Interviews with FAMC personnel indicated that when Building No. 175 was constructed, the ASTs were moved and petroleum-saturated soil from this location was removed. Visual inspection revealed that Building Nos. 106 and 107 have dirt floors and were used to store equipment and pesticides. Large equipment is stored immediately north of Building No. 175 on bare ground. Environmental documents indicate that Landfill 1 is located beneath the driving range (see Section 5.1.2 for additional information).

- A Category 7 area was identified immediately east of the golf course driving range and includes the WWTP and associated lagoons, two former incinerators, an autoclave, and the current hazardous waste accumulation building. FAMC records and interviews with FAMC personnel indicated that the WWTP has historically received influent suspected of containing low-level radionuclides, heavy metals, and other chemicals. FAMC records indicated that incinerators were formerly located immediately south of Building No. 265.

- A Category 7 area was also identified immediately east of the WWTP, east and southeast of Building No. 260, the area surrounding Building No. 340 and 344, and along the eastern boundary of FAMC including Building Nos. 616 and 617. Environmental documents and interviews with FAMC personnel revealed the presence of Landfills 2, 3, and 4 in these areas. The records indicate that various types of materials were buried in the landfills, including hazardous wastes, medical wastes, construction debris, and incinerator ash. In addition, two incinerators were previously located in this area. One of these incinerators has been demolished; however, one, Building No. 616, still remains.

- The radioactive waste landfill was determined to be a Category 7 area. This site is located on the east side of FAMC, immediately east of Building No. 642. Additional information concerning this site is described in Section 5.1.2 and 5.2.7.

- A Category 7 area was identified on the southeast corner of FAMC. One FAMC employee stated that during the construction of the Post Exchange in 1974, three drums were discovered while grading the parking lot immediately west of Building No. 817. He suspects a landfill is located west and south of Building No. 817. Although these claims could not be substantiated, the area has been assigned Category 7 pending further evaluation.

6.8 ENVIRONMENTAL, HAZARDOUS, AND SAFETY ISSUES NOT RELATED TO CERCLA

Issues relating to non-CERCLA contaminants were identified in the EBS to support the development of CERFA parcels for FAMC. Non-CERCLA contaminants at FAMC include

asbestos, lead-based paint, polychlorinated biphenyls, radon, and radionuclides. Additional information can be found in Section 5. A summary of the results of the EBS investigation for non-CERCLA issues is presented below.

6.8.1 Asbestos

Management of asbestos at FAMC has historically been conducted on an as-needed basis. The majority of the buildings at FAMC have undergone asbestos abatement, and the majority of underground utility lines and crawlspaces have been abated. Figure 6.3 presents the current status of each building and underground utility line at FAMC with respect to asbestos abatement.

Those buildings labeled as a probable location of asbestos hazards include some where removal actions have occurred, but where a complete survey has not been performed. The potential exists that asbestos still remains in the buildings, or it is assumed asbestos is present in the building and no removal actions have occurred to date. Buildings that are not labeled as a probable location of asbestos hazards are where an asbestos survey has been performed and all asbestos has been removed, or new construction where asbestos was not used.

6.8.2 Lead-Based Paint

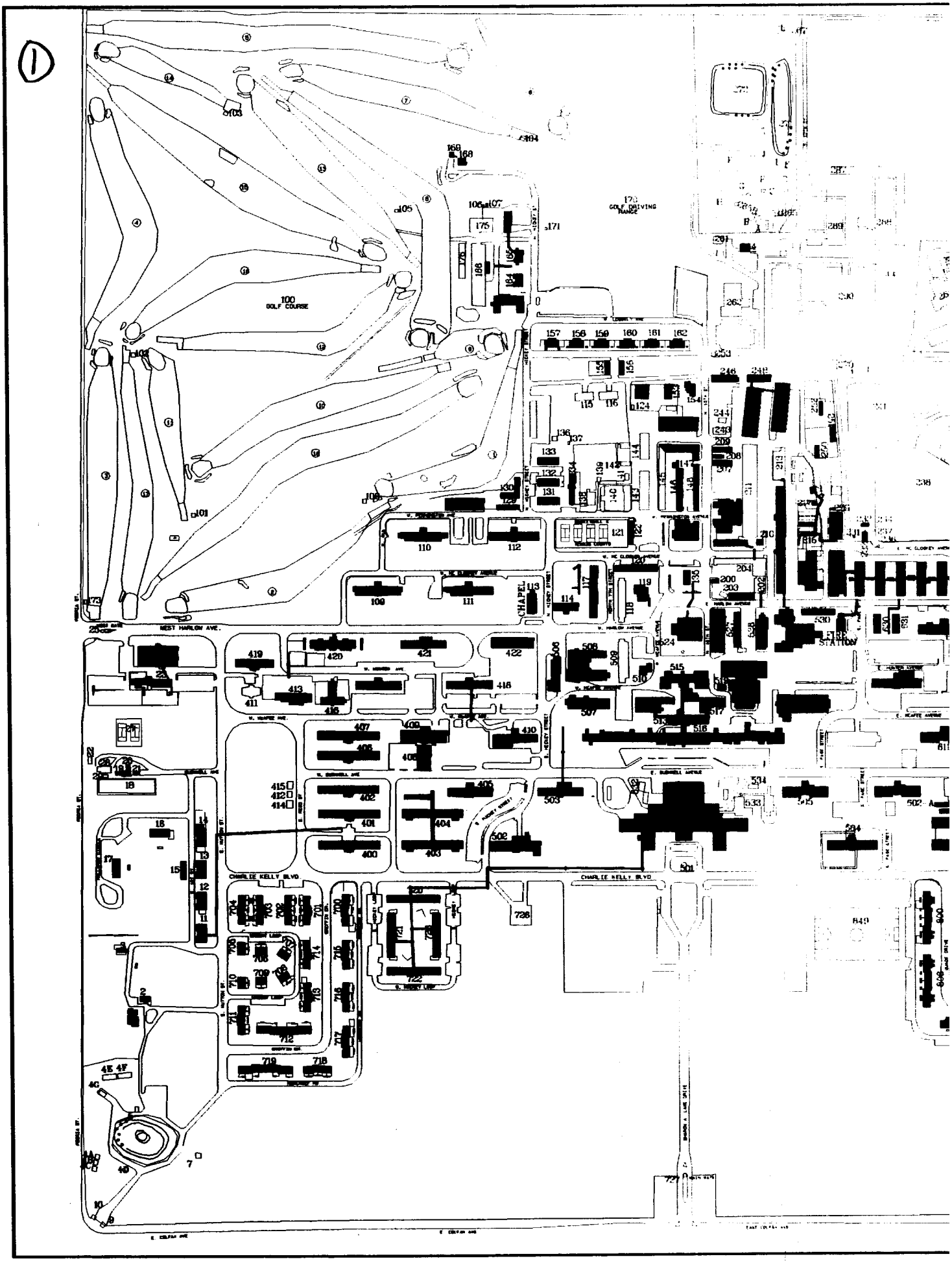
A formal survey for lead-based paint has not been conducted at FAMC. A standard based on date of construction was used to project the existence of lead-based paint. Structures built after 1985 were assumed to be free of lead-based paint, and structures built prior to 1985 were assumed to contain lead-based paint unless information contrary to this assumption was found. The 1985 date was based on conversations with Base personnel who believe lead-based paint was stored and used until 1985 at FAMC. Figure 6.4 identifies those buildings that are suspected to contain lead-based paint.

6.8.3 Polychlorinated Biphenyls

A formal PCB program has been maintained at FAMC since the 1980s (see Sections 5.1.6 and 5.2.7 for additional information). No areas at FAMC currently store out-of-service PCB-contaminated transformers. As the installation closes, equipment containing PCBs is identified and disposed of offsite.

6.8.4 Radon

Sampling for naturally occurring radon has been conducted at FAMC since 1990. Those buildings in which radon levels exceeded 8 pCi/L were retested in 1992 to establish an understanding of those buildings that have a higher priority and shorter time for implementation of mitigation. Buildings in which radon concentrations exceeded 8 pCi/L in 1992 were retested again in 1995. Building No. 320, the Officers' Quarters, remains above 8 pCi/L. The EPA-recommended action level for radon mitigation is 4 pCi/L. Figure 6.5 identifies those buildings with measured radon concentrations exceeding 4 pCi/L.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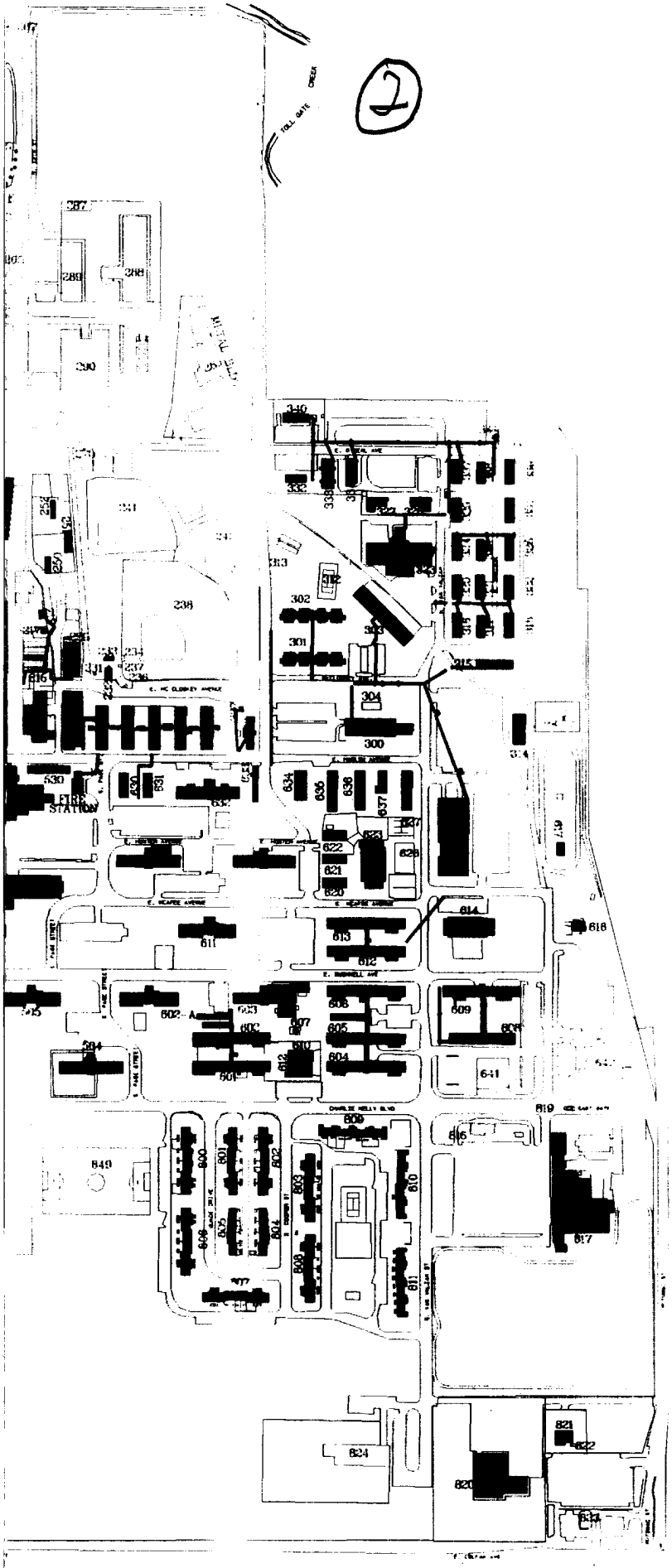
GOLF COURSE
170
GOLF DRIVING RANGE
CHAPEL
FIRE STATION
CHARLIE KELLY BLVD
WEST HARLOW AVE.



Legend

Probable Location of Asbestos Hazards

N

100 0 100 200 300

SCALE IN METERS

REVISION	DATE	DESCRIPTION

ENVIRONMENTAL BASEL
FITZSIMONS ARMY MEDI

SOURCE: Fitzsimons Army Medical Center

LOCATIONS O

Projection: UTM - NAD27

(3)

Legend

Probable Location of Asbestos Hazards

100 0 100 200 300 400

SCALE IN METERS

REVISION	DATE	DESCRIPTION	BY

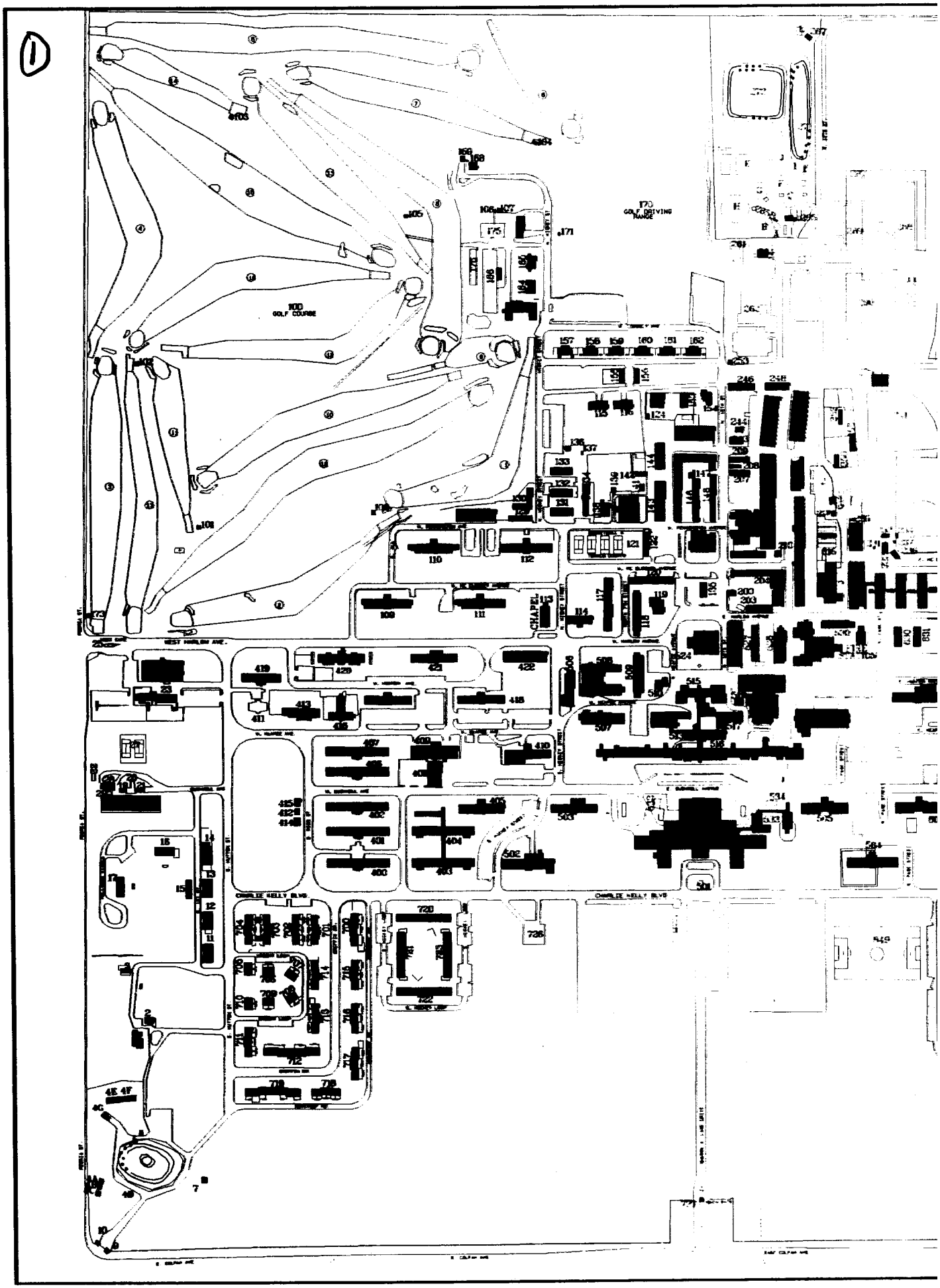
ENVIRONMENTAL BASELINE SURVEY
FITZSIMONS ARMY MEDICAL CENTER

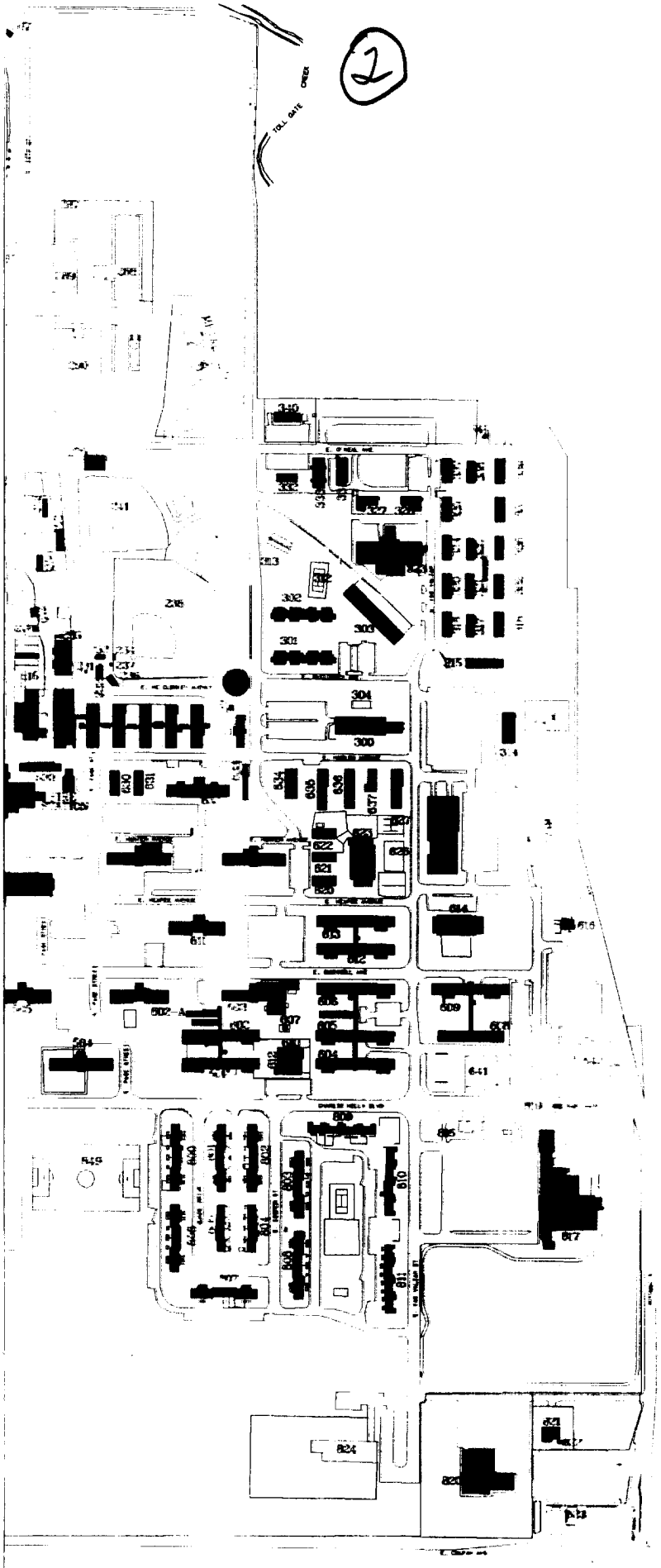
SOURCE: Fitzsimons Army Medical Center

LOCATIONS OF ASBESTOS

Projection: UTM - NAD27

Figure 6.3


100
GOLF COURSE
170
GOLF DRIVING RANGE
CHAPEL
CHARLIE KELLY BLVD
WEST HARLEM AVE.



Legend

Probable Location of L
Based Paint Hazards

N

100 0 100 200 300

SCALE IN METERS

REVISION	DATE	DESCRIPTION

ENVIRONMENTAL BASELIN
FITZSIMONS ARMY MEDIC

SOURCE:
Army Medical Center

LOCATIONS OF
PAINT

Projection UTM - NAD27

(3)

Legend

Probable Location of Lead Based Paint Hazards

100 0 100 200 300 400

SCALE IN METERS

REVISION	DATE	DESCRIPTION	BY

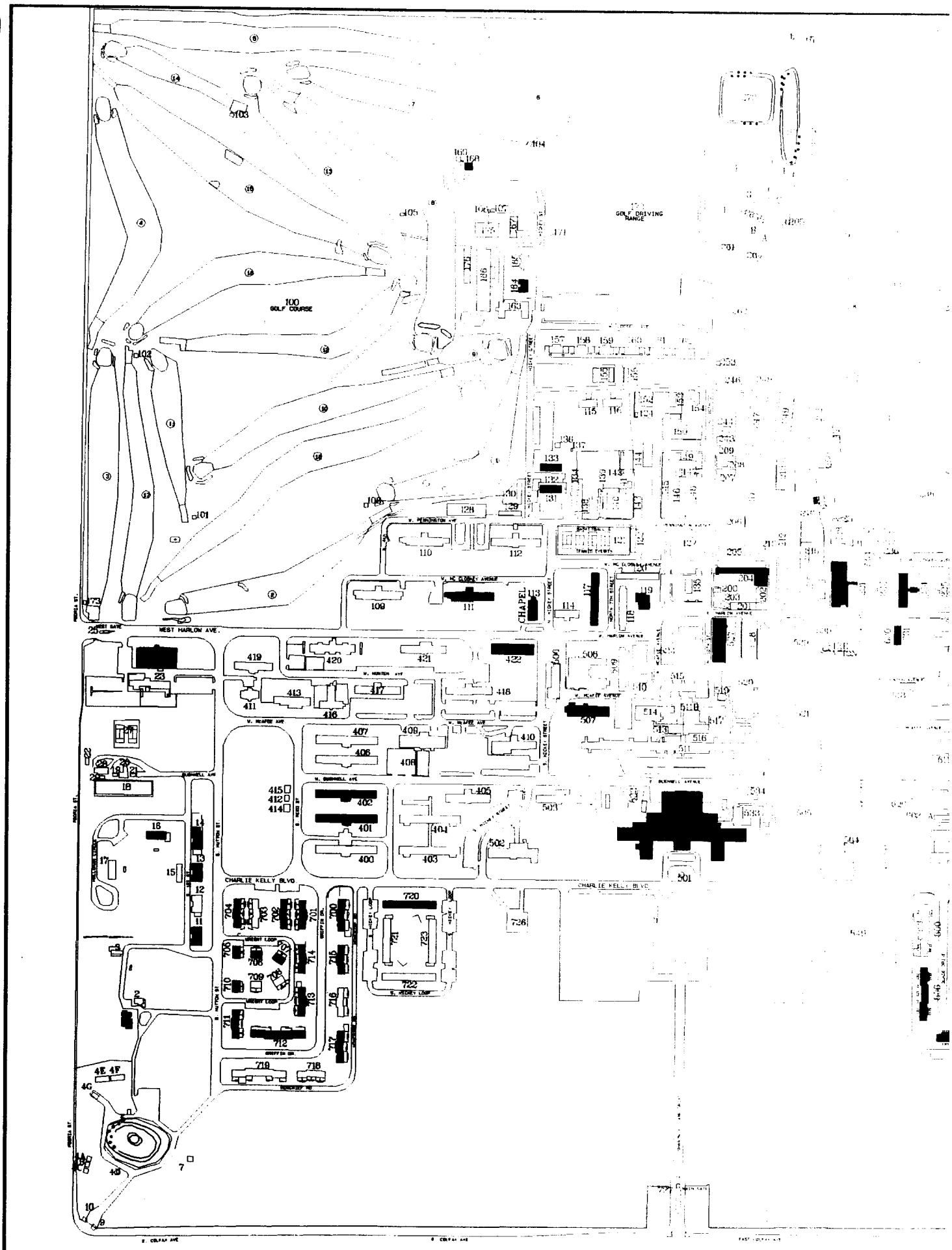
ENVIRONMENTAL BASELINE SURVEY
FITZSIMONS ARMY MEDICAL CENTER

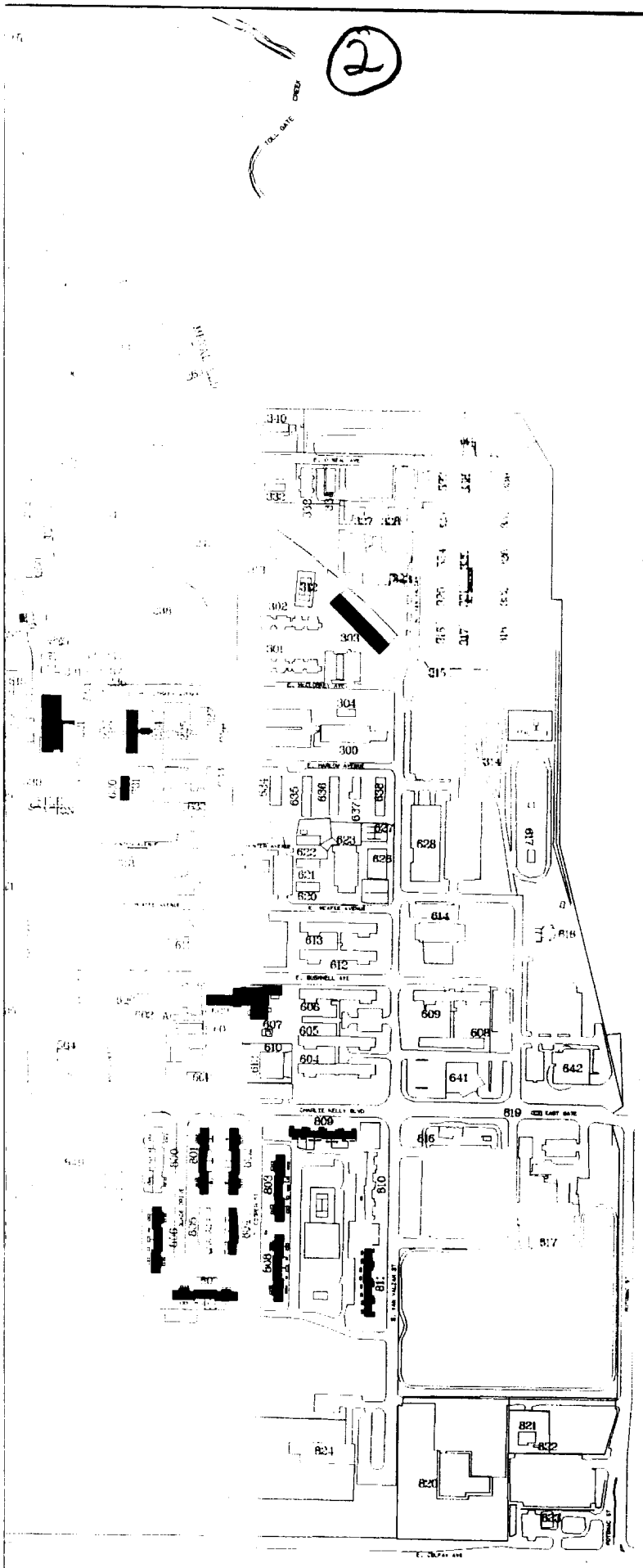
SOURCE: [illegible] Army Medical Center

LOCATIONS OF LEAD BASED PAINTS

Projection: UTM - NAD27

Figure 6.4


100
GOLF COURSE
GOLF DRIVING RANGE
CHAPEL
WEST HARLON AVE.
CHARLIE KELLY BLVD
E. COLFAX AVE


Legend
Buildings with Radon Levels Above 4 pCi/L
N
100
0
100
200
300
SCALE IN METERS
REVISION
DATE
DESCRIPTION
ENVIRONMENTAL BASELINE
FITZSIMONS ARMY MEDICAL
SOURCE:
Fitzsimons Army Medical Center
LOCATIONS OF
Projection: UTM - NAD27

(3)

Legend

Buildings with Radon Levels Above 4 pCi/L

100 0 100 200 300 400

SCALE IN METERS

REVISION	DATE	DESCRIPTION	BY

ENVIRONMENTAL BASELINE SURVEY
FITZSIMONS ARMY MEDICAL CENTER

SOURCE: Fitzsimons Army Medical Center

LOCATIONS OF RADON

Projection: UTM - NAD27

Figure 6.5

6.8.5 Radionuclides

Several buildings that used or historically stored radioactive materials or wastes at FAMC are shown on Figure 6.6. Radionuclides were primarily used in these buildings for medical treatment and research and development. The majority of the radionuclides were short-half-life isotopes, sources, and calibration standards. In addition, a low-level radioactive waste landfill, Landfill 5, is located east of Building No. 642.

6.9 ADJACENT OR SURROUNDING PROPERTY SOURCES

Review of government records and aerial photographs revealed the presence of numerous businesses along the East Colfax Avenue, Peoria Street, and Potomac Street corridors that store hazardous substances and petroleum products. Documentation confirmed releases from one offsite source that has impacted FAMC property and another that has the potential to impact FAMC property.

The gasoline station located on the southeast corner of the East Colfax Avenue and Potomac Street intersection experienced a spill of petroleum product that has migrated onto FAMC property. Benzene contamination has been detected above regulatory action levels. The source area is currently under remediation. Contamination from this gasoline station is well documented and is being monitored for BTEX semi-annually. The point-of-compliance groundwater monitoring well for the site is located on FAMC property, and is also monitored regularly.

The gasoline station located on the northwest corner of the East Colfax Avenue and Peoria Street intersection has confirmed petroleum contamination beneath the building. Sampling activities performed on the site revealed the presence of contamination above regulatory levels in the soil and groundwater. The site is currently under remediation and is monitored on a regular basis. Groundwater sampling has never been performed on the southwest corner of FAMC to determine the extent of contamination from the gasoline station. According to regulatory records, groundwater flow from the gasoline station is toward FAMC. Therefore, the potential exists for contamination to migrate onto the southwest corner of FAMC.

6.10 REMEDIATION EFFORTS

Remediation efforts are permanent remedies or removal actions in the event of a release of a hazardous substance. Remediation efforts conducted to date at FAMC have been relevant to spills and leaking USTs. FAMC and regulatory agency spill records indicate that spills of hazardous substances and petroleum products have been responded to and remediated on a timely basis.

USTs adjacent to Building No. 230, a former gasoline station on FAMC property, were removed and soil samples were collected. Elevated levels of petroleum products were detected in the soil. The contaminated soil was excavated to acceptable regulatory levels and shipped offsite for disposal. The closure report was submitted to the State Oil Inspector's Office. Documentation of closure from the State Oil Inspector's Office has not yet been received by FAMC. Additional information concerning this action can be found in Section 5.1.3. Design and build remediation efforts are underway at Building No. 135, the AAFES Station.

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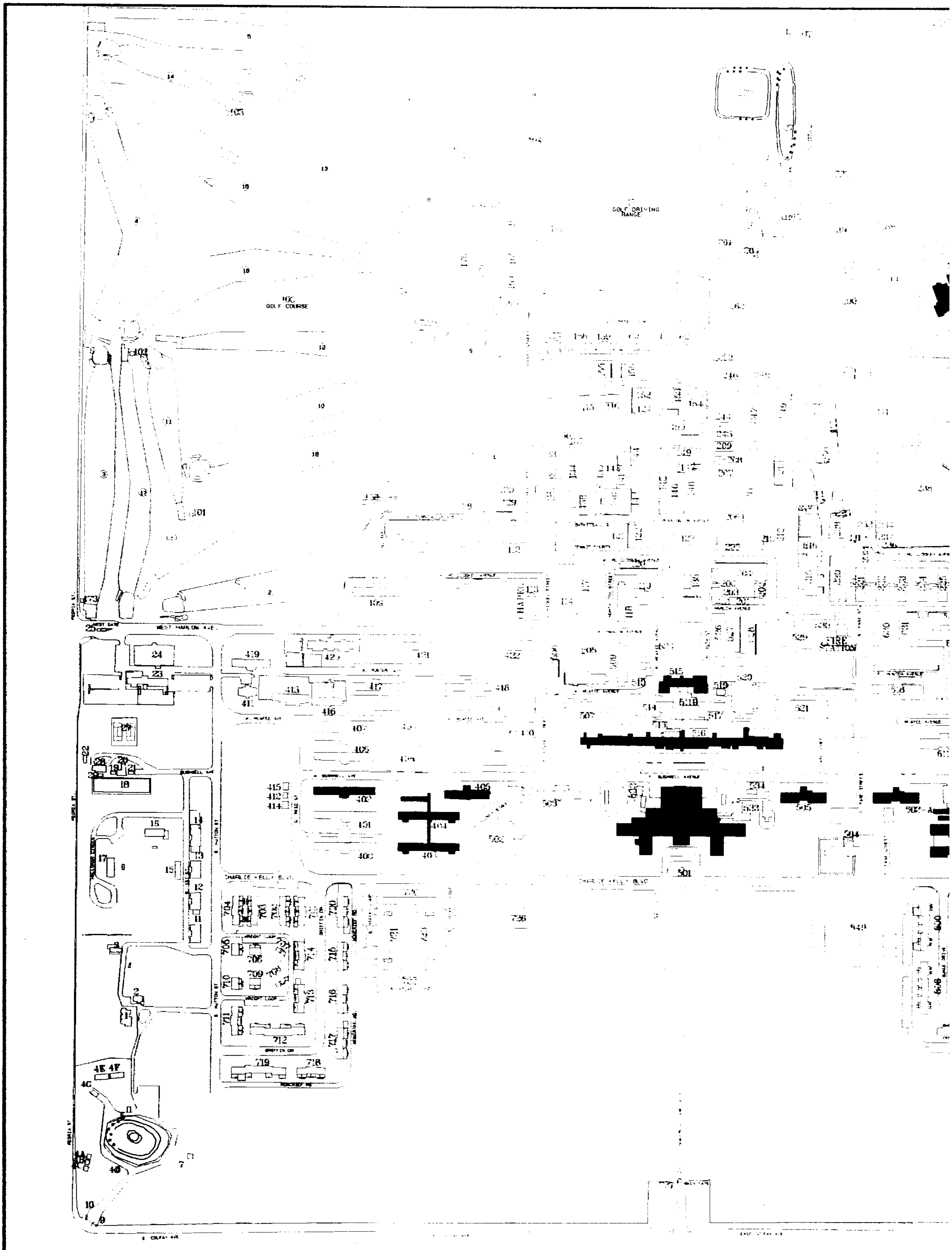
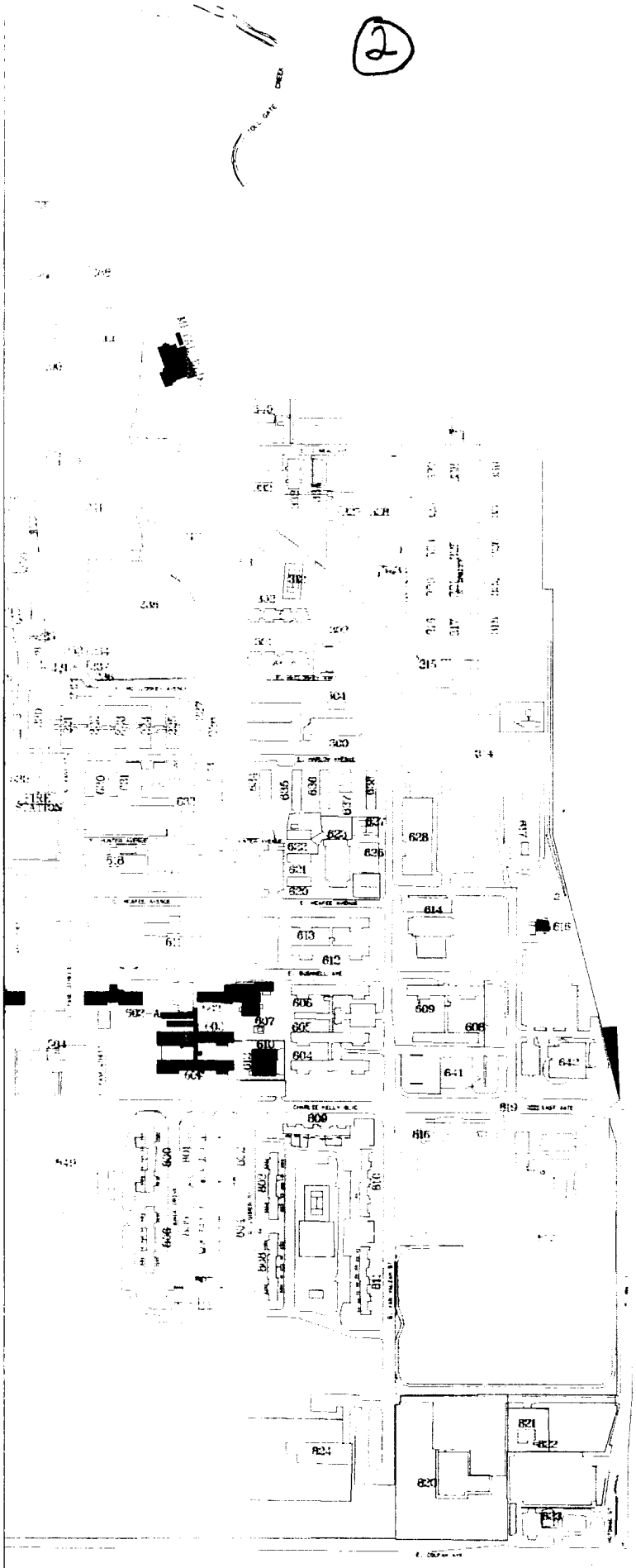

GOLF DRIVING RANGE
GOLF COURSE
CHAPEL
FIRE STATION
WEST HARLOW AVE.
CHARLIE KELLY BLVD.
BUSHNELL AVE
WRIGHT LOOP
GRIFFIN DR



Legend

Location of Radioactive Materials and Wastes

N

100 0 100 200 300

SCALE IN METERS

REVISION	DATE	DESCRIPTION

ENVIRONMENTAL BASELINE
FITZSIMONS ARMY MEDICAL

SOURCE: Fitzsimons Army Medical Center

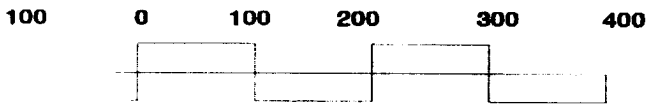
LOCATIONS OF RADI

Projection: UTM - NAD27

(3)

Legend

Location of Radioactive Materials and Wastes



SCALE IN METERS

REVISION	DATE	DESCRIPTION	BY

ENVIRONMENTAL BASELINE SURVEY
FITZSIMONS ARMY MEDICAL CENTER

SOURCE: Fitzsimons Army Medical Center

LOCATIONS OF RADIONUCLIDES

Projection: UTM - NAD27

Figure 6.6